

ICHTHYOLOGICAL NOTES AND ILLUSTRATIONS.

By G. P. WHITLEY.

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(Plates i.-ii. and text-figures.)

Some noteworthy fishes, examined in recent years, are described or illustrated in this paper, with notes on distribution, taxonomy, and other matters. As in my "Illustrations of some Australian Fishes", published in the Australian Zoologist, ix., December, 1940, I have not repeated such references to literature as can be found in McCulloch's "Check-List" (Australian Museum Memoir, v., 1929).

I am indebted to Dr. H. Thompson, of the C.S.I.R. Marine Biological Laboratory, Cronulla, New South Wales; to Messrs. H. Longman and T. C. Marshall, of the Queensland Museum, Brisbane; and to Mr. K. Salter, Curator of the Macleay Museum, University of Sydney, for placing rare and valuable specimens at my disposal. Mr. G. C. Clutton, of the Australian Museum, took the photographs.

Some of the fishes mentioned hereunder have potential economic importance and correct classification is a first step towards systematic knowledge of them. A new Ophidiid from the Great Australian Bight may prove a good food-fish in the future. Several remarkable larval or young fishes are recorded from Australia for the first time, and the juvenile stages of morwongs and trumpeter discussed. A few notes made in overseas museums before the war have been included.

Family CLUPEIDAE.

ESQUALOSA ABBREVIATA (Cuv. & Val., 1847).

I was unable to trace the type of *Harengula abbreviata* Cuv. & Val., 1847, in the Museum National d'Histoire Naturelle, Paris, where the only specimen so-called was "acquis en échange du Musée Australien de Sidney, 21 Juin, 1866. No. 14 = 4180". This was the same species as *Kowala castelnaui* Ogilby, 1897, from Sydney, whose name is obviously a synonym of *abbreviata* which belongs to my genus *Escualosa*, 1940.

Genus CLUPALOSA Bleeker, 1849.

CLUPALOSA BULAN Bleeker, 1849.

(Fig. 1.)

Clupalosa bulan Bleeker, Verh. Batav. Genootsch., xxii., 1849, Ichth. Madura, p. 12. Madura, East Indies. *Id.* Bleeker, *ibid.*, xxiii., 1850, p. 11, and xxiv., 1852, p. 30.

Clupea (Harengula) bulan Bleeker, Atlas. Ichth., vi., 1872, p. 110, pl. cclxvi., fig. 5. *Id.* Weber and Beaufort, Fish. Indo-Austr. Arch., ii., 1913, pp. 69 and 73.

Harengula bulan Paradice and Whitley, Mem. Qld. Mus., ix., 1, 1927, pp. 79 and 97 (Darwin).

Here figured from the young specimen, 34 mm. in standard length,

recorded from Darwin in 1927. Austr. Mus. Regd. No. IA.1527. It has the following characters:—D.i., 17; A.19; Sc. 37; Tr., 12 to 13. Twelve predorsal scales. Adipose eyelids narrow. Mouth small, upper jaw notched at symphysis. Rudimentary teeth on palate. Venules on cheeks and shoulders. Depth one-third standard length. Scales numerous, without transverse ridges. Dorsal origin nearer snout than tail. Scaly sheaths to dorsal and anal fins. Margins of fins rounded. Pectorals long and pointed. Sixteen plus ten ventral scutes.

Coloration plain yellowish in formalin, some large dark chromatophores on snout, along dorsal base, median line of back, and looping upper half of caudal peduncle; fins infuscated.

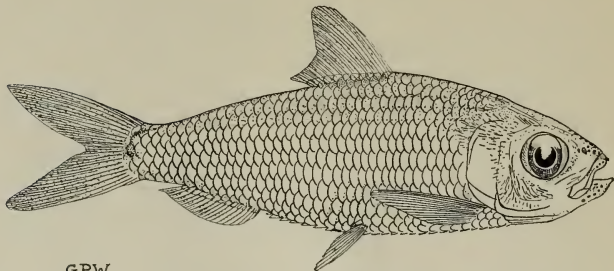


Fig. 1. Herring, *Clupalosa bulan*. Young from Darwin, N.T.

Family ENGRAULIDAE.

Genus *THRISSINA* Jordan and Seale, 1925.

Thrissina Jordan and Seale, Copeia, 1925, p. 30; Bull. Mus. Comp. Zool., lxvii., 11, 1926, p. 375. Orthotype, "*Clupea boelama* Forskal" [Non-binomial vernacular name = *Clupea baelama* Bloch and Schneider, Syst. Ichth., 1801, p. 429] = *Thrissina baelama*. Id. Hardenberg, Nat. Tijdschr. Ned. Ind., xciii., 2, 1933, p. 243 (regarded as = *Thrissa*, but that genus has much longer maxillary).

Maxillary not extending to gill-opening. Lower jaw included. Teeth even, no canines. Gill-rakers 23 or 24 on lower branch of first gill-arch. Scales firm. No silvery lateral stripe. Vertebrae 39 to 42. Ventral scutes weak, almost hidden by scales, none before pectorals in the Red Sea genotype, but there are five in the Queensland species, *aestuaria*. No enlarged alar scales on caudal. Caudal peduncle short below. Dorsal fin preceded by a spine. Anal base behind level of dorsal. Anal rays 31 to 34. Uppermost pectoral ray pointed but not produced, reaching ventral origin.

Close to *Scutengraulis* but has weaker ventral scutes, fewer vertebrae and anal rays, and shorter anal base in relation to standard length.

THRISSINA AESTUARIA (Ogilby, 1910).

(Fig. 2.)

Anchovia aestuaria Ogilby, Proc. Roy. Soc. Qld., xxiii., November, 1910, p. 4.

Brisbane River, Queensland. Holotype in Amat. Fisherm. Assoc. Qld. coll., Brisbane; co-types in Queensland and Australian Museums. *Id.* Ogilby, Fish. Rept. Qld. 1910-1911 (1912), append.

Engraulis nasutus De Vis, Proc. Linn. Soc. N.S. Wales, vii., 1882, p. 319. (One of De Vis' specimens in Aust. Mus. examined.) *Id.* Saville-Kent, Great Barrier Reef, 1893, pp. 301 and 370. (Brisbane records.) Not *Engraulis nasutus* Castelnau, 1878, from the Norman River, North Queensland.

Here illustrated from one of Ogilby's co-types (regd. No. I.9498) in The Australian Museum, and measuring 122 mm. in standard length. It has five scutes before the pectoral base and eight behind the ventral fin, the intermediate ones obscured by scales.

Locality.—Brisbane River, Queensland.

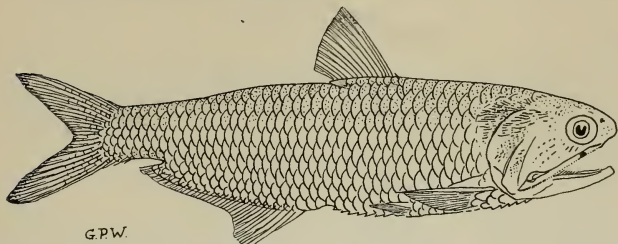


Fig. 2. Anchovy, *Thrissina aestuaria*. Co-type, Brisbane River, Qld.

Genus *SCUTENGRAULIS* Jordan and Seale, 1925.

SCUTENGRAULIS SCRATCHLEYI (Ramsay and Ogilby, 1886).

(Fig. 3.)

Engraulis scratchleyi Ramsay and Ogilby, Proc. Linn. Soc. N.S. Wales (2), i., May 25, 1886, p. 18. Strickland River, New Guinea. Holotype (No. B.9951) in Australian Museum. *Id.* Weber and Beaufort, Fish. Indo-Austr. Arch., ii., 1913, p. 34. *Id.* Weber, Nova Guinea, ix., 1913, pp. 517, 604 & 607 (Lorentz River). *Id.* Regan, Trans. Zool. Soc. London, xx., 2, 1914, p. 276 (Mimika River, Dutch N.G.). *Id.* Fowler, Mem. Bish. Mus., x., 1928, p. 32.

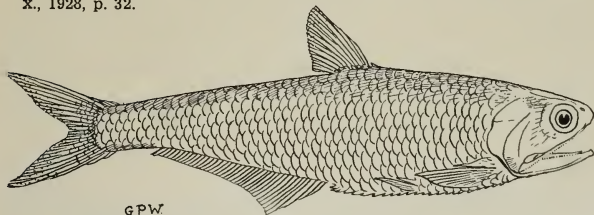


Fig. 3. Anchovy, *Scutengraulis scratchleyi*. Holotype, Strickland River, New Guinea.

Anchovia scratchleyi Jordan and Seale, Bull. U.S. Bur. Fish., xxv., 1905 (1906), p. 188.

Thrissocles scratchleyi Fowler, Mem. Bish. Mus., xi., 1934, p. 387, and Bull. U.S. Nat. Mus., 100, xiii., 1940, p. 670.

This species has not hitherto been figured, so I supply a drawing of Ramsay and Ogilby's holotype. I have also seen a New Guinea specimen in the Queensland Museum.

In Jordan and Seale's "Review of the Engraulidae" (Bull. Mus. Comp. Zool. Harvard, lxvii., 11, May, 1926) this species enters the subfamily Stolephorinae and genus *Scutengraulis*, having ventral scutes continuous from throat to vent, and the dorsal fin preceded by a short free spine.

Family GALAXIIDAE.

GALAXIAS BONGBONG Macleay, 1881.

(Plate i., fig. 4.)

Here figured from the lectotype of the species, a specimen 68 mm. in standard length, from Bong Bong, New South Wales, kindly lent for illustration by the Curator of the Macleay Museum, University of Sydney, where the co-types are preserved.

Family ALEPOCEPHALIDAE.

BINGHAMICHTHYS, *gen. nov.*

Orthotype, *Binghamia microphos* Parr, 1937 = *Binghamichthys microphos*.

This new name is necessary to replace *Binghamia* Parr (Bull. Bingham Oceanogr. Coll., iii., 7, August, 1937, pp. 2, 7 and 22), which is preoccupied by *Binghamia* Tutt, Brit. Butterflies, iii., 1908, pp. 41 and 43, if not by *Binghami* Brown, 1827, in Mollusca.

Family ASTRONESTHIDAE.

Stomioid fishes with adipose dorsal fin present and no scales on body. Dorsal fin inserted behind level of vent, its base in advance of that of anal fin. Body elongate, naked.

Genus ASTRONESTHES Richardson, 1845.

Astronesthes Richardson, Zool. Voy. Sulphur, i., Fish, 1845, p. 97. Haplotype, *A. nigra* Richardson, from China (?).

Stomianodon Bleeker, Verh. Batav. Genootsch., xxii., 1849, Ichth. Faun. Bali, p. 10. Haplotype, *S. chrysophekadion* Bleeker, from Bali, East Indies.

Phaenodon Lowe, Proc. Zool. Soc. London, xviii., 1850 (January 24, 1852), p. 250. Haplotype, *P. ringens* Lowe, from Madeira.

Phaenodus Goode and Bean, Spec. Bull. U.S. Nat. Mus., 1895, Ocean. Ichth., p. 105. For *Phaenodon* Lowe.

"*Stomiatella C.*" Roule and Angel, Res. Camp. Sci. Monaco, lxxix., 1930, p. 16, pl. i., figs. 8-9.

The interesting larval fish described below may be a young *Astronesthes* whose adult form and whose species are unknown. It is, however, not certain that it belongs to this genus and since Roule and Angel's larval name *Stomiatella* has been applied in part to other genera by Beebe and

Crane (Zoologica, xxiv., 2, July 31, 1939, pp. 67, 74 and 75), it seems advisable to provide a distinctive new subgeneric name for the Australian fish. I therefore propose *Warreenula*, subg. nov. with the new species *lupina* as orthotype. It differs markedly from adult *Astronesthes* in characters of dentition, alimentary canal, lack of ventral fins, light-organs and barbel, but how far these differences may be due to metamorphosis can only be determined when larger specimens can be obtained. It agrees with no species in Regan and Trewavas' recent revision (Dana Rept., v., 1929).

ASTRONESTHES (WARREENULA) LUPINA, subg. et sp. nov.

(Fig. 5.)

D., 14; A., 13; P., ?; V.O.; C., 18. About 50 myotomes. Size small, general facies as shown in the figure.

Head about one-fifth length, with gaping jaws, the lower longer. Maxillary broad, with about nine larval teeth along edge. Snout slightly excavate above. Eye oblique, oval, not pedunculate. No barbel. Gill-rakers present. Nape slightly tumid.

Body elongate, with six large black pigment-spots on sides. No lateral line. Alimentary canal with long free posterior portion. Intestine not yet enclosed by myomeres. No yolk-sac.

Dorsal fin fan-like, on elevated base, in advance of caudal peduncle and with finfold before and behind. Anal base similar to dorsal, entirely

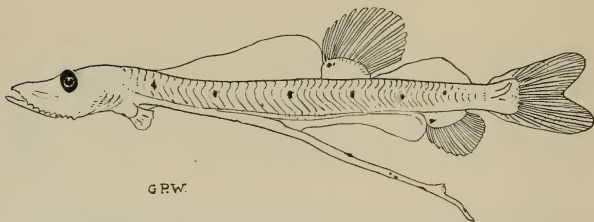


Fig. 5. Little Wolf, *Astronesthes (Warreenula) lupina*. Holotype, New South Wales.

behind level of dorsal, with finfold anteriorly only. Caudal bilobed. Pectoral pads with fringe of rays. No ventral fins; I cannot trace a rudiment unless it be under the fourth pigment spot.

Whitish with six black spots along sides, more widely spaced anteriorly; other groups of chromatophores before dorsal and anal bases and along free alimentary canal. A pair of spots between pectorals.

Less than 1 inch long (20 mm. in standard length or nearly 24 mm. over all).

Locality.—Off Port Stephens, New South Wales; M.V. "Warreen" station, 55°38' = 32° 40'S. x 152° 22'E. Netted 27/9/1938. Type in C.S.I.R. Marine Biological Laboratory, Cronulla, New South Wales.

New record (family, genus and species) for Australia.

Family IDIACANTHIDAE.

Genus *STYLOPHTHALMUS* Brauer, 1902.*STYLOPHTHALMUS PARADOXUS* Brauer, 1902.

(Fig. 6.)

? *Idiacanthus fasciola* Peters, Monatsb. K. Akad. Wiss. Berlin, 1876 (1877), p. 847. Northern Australia and New Guinea.

Stylophthalmus paradoxus Brauer, Zool. Anzeiger, xxv., 1902, p. 298. Indian Ocean, Antarctic Seas, and south of Capetown. *Id.* Brauer, Verh. Deutsch. Zool. Gesellsch., xii., 1902, p. 56, figs. *Id.* Chun, Tiefen Weltmeeres, 1903, p. 577 and fig. *Id.* Brauer, Wiss. Ergeb. Deutsch. Tiefsee Exped., xv., 1, 1906, p. 66, pl. v., *et ibid.*, xv., 2, 1908, p. 178 and anat. figs. And of later authors.

This curious genus and species was originally described by Brauer from south of Capetown, Antarctic Seas, and the Indian Ocean. In his "Valdivia" report (*loc. cit.*, 1906), he gave figures and an extended description, based on 35 specimens, many of them additional to the original series, and recorded fresh localities. It is probable that more than one species is confused under the specific name, but we may follow Chun (1903) who indicated that the form shown in Brauer's "Valdivia", pl. v., fig. 6, came from the equatorial Indian Ocean, so that specimen may be regarded as lectotype and that locality as typical. The type-specimens are in the Berlin Museum, where I saw them in November, 1937.

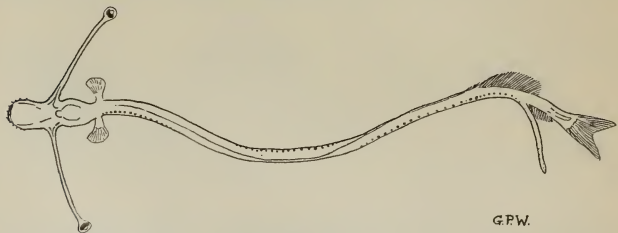


Fig. 6. Stalk-eyed Marvel, *Stylophthalmus paradoxus*. New South Wales.

Since Brauer's time, *Stylophthalmus* has been demonstrated to be a larval form common to several different kinds of deep-sea fishes, but the name may be retained until the exact identity of the typical adult can be determined. In this connection, see especially Beebe, Zoologica, xvi., 4, 1934, pp. 149-241, figs. 47-81.

I was surprised to find one of these larvae in a collection of surface fishes from New South Wales made by the M.V. "Warreen". It seems best to use Brauer's name for this until further investigation shows whether it be true *paradoxus* or not.

The Australian specimen may be thus described; because of its small size it is impossible to give exact fin-counts, etc.

Head depressed, "duck-billed", lower jaw longer, the mouth with spaced

teeth along margin. Eyes at end of long stalks. Brain visible through skull.

Body, very elongate, compressed, about a millimetre deep. A single row of spaced melanophores along each side, about 64 to origin of dorsal fin and 71 to base of vent, where the alimentary canal proceeds free of the body for some distance, reaching caudal, but less than length of eye-stalks.

Dorsal fin preceded by a fin-fold, its origin in posterior fifth of body; there appear to be 30 main rays with incipient rays anteriorly and posteriorly. Anal originating below hinder part of dorsal, with 17 rays. Pectorals just behind head with fleshy bases. No ventrals. Caudal forked.

It differs in proportions and fin-counts from Brauer's pl. v., fig. 6, which is more like my specimen than his other figures.

Translucent whitish or yellowish, the eyes very dark grey. Rows of blackish spots along sides for most of length. Free portion of alimentary canal speckled.

Length about $1\frac{1}{2}$ inches or 40 mm.

Locality.—Sixteen miles E.N.E. of Point Perpendicular, New South Wales. "Warreen" station, 142/39; net 200 horizontal; 30/5/1939. C.S.I.R. collection, Marine Biological Laboratory, Cronulla, New South Wales.

New record for New South Wales and for Australia, too, unless it be the young of *Idiacanthus fasciola* Peters, 1877, a tropical species.

Family PLOTOSIDAE.

Genus POROCHILUS Weber, 1913.

POROCHILUS OBBESI Weber, 1913.

Porochilus obbesi Weber, Nova Guinea, ix. (4), 1913, pp. 523, 604 and 607, figs. 4-5. Lorentz River, south New Guinea. *Id.* Weber and Beaufort, Fish. Indo-Austr. Archip., ii., 1913, p. 235, figs. 94-95. *Id.* Fowler, Mem. Bish. Mus., x., 1928, p. 63.

Two specimens, up to $2\frac{1}{2}$ inches long, from Yam Creek (nine miles from Brock's Creek, railway line south from Darwin), Northern Territory of Australia, were collected many years ago by A. Morton (Regd. Nos. A.4823a and I.B.618).

New record for Australia, and, since the genus and species is otherwise known only from southern New Guinea, another indication of the uniformity of the Leichhardtian fluvifauna.

NEOSILURUS MORTONI, *sp. nov.*

(Fig. 7.)

Head (35 mm.), 4.8; depth (32), 5.3 in standard length (170). Pre-anal length, 65 mm. Predorsal length, 49 mm. Caudal fin, 25 mm. Eye (8), less than snout (13) and interorbital (10) and 4.3 in head. Nasal barbel (13 mm.) equal to the snout, which is broader than long. Maxillary barbel (18) reaching to behind eye. Mandibular barbel (21) reaching to beyond gill-opening below, not reaching pectoral base. Mental barbel (12.5) shortest of all. Lips not markedly plicate. Upper jaw the longer. Width of mouth subequal to interorbital. Brown, blunt, peg-like teeth in jaws, and a group of spaced molariform teeth on vomer; crowns of some mandibular teeth rounded. Anterior nostril on each side of head above upper jaw; opening laterally. Orbit with free margin. Opercle with radiating striae. Fifteen gill-rakers on lower branchial arch, their inner basal mem-

brane with knob-like processes. Gill-membranes united, free of isthmus.

Body very compressed, lanceolate. Skin smooth, without filaments. Lateral line almost straight. An anal papilla, but no dendritic appendage. An axillary pore present. Dorsal spine (14 mm.) pungent, with small serrations behind, granular anteriorly. Distal portions of dorsal and pectoral spines cartilaginous, forming a kind of rayed membrane between osseous tip of spines and first rays of fins. Four branched dorsal rays. Dorsal base behind level of pectoral base. Height of first dorsal fin not

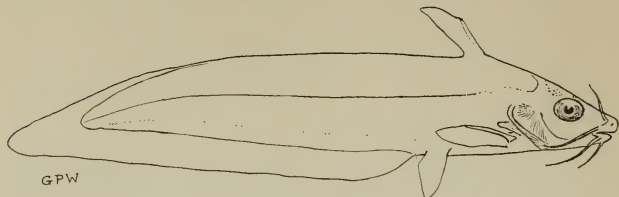


Fig. 7. Morton's Tandan, *Neosilurus mortonii*. Holotype, Yam Creek, Northern Territory.

nearly as much as depth of body below it. Procurent (caudodorsal) fin very low, not nearly reaching half-way along fish, and well behind level of ventrals. Preanal length 1/3rd of total. Anal fin long and high, with about 80 rays, the last connected with caudal fin. Pectorals with a serrated spine and seven rays. Ventrals with twelve rays. Caudal with 19 rays, asymmetrical, its axis sloping obliquely downwards, its margin convex.

Colour, after long preservation in alcohol, brownish, with numerous punctulations on head and fins. May have been greyish or silvery in life. Barbels and teeth dark brown.

Length $7\frac{3}{4}$ inches overall. Distinguished from its allies by its fin-formulae, gill-rakers, barbels, proportions, and reduced caudodorsal procurent fin.

Locality.—Yam Creek (nine miles from Brock's Creek, railway line south from Darwin), Northern Territory of Australia; coll. A. Morton, 1879, Austr. Mus., Regd. No. A. 4,824.

This species is named in honour of Alexander Morton (1855 ?—1907) who collected specimens for The Australian Museum in many parts of Australia, the South Sea Islands, New Guinea and Lord Howe Island.

FAMILY TACHYSURIDAE.

COCHLEFELIS, gen. nov.

Orthotype, *Arius spatula* Ramsay and Ogilby, 1886.

Head very long and depressed, wider than deep, protected above by an exposed, granulated casque. Top of the spatulate snout membranous. Fontanelle narrow posteriorly. Nostrils approximate, the posterior valvular; no nasal barbels. Eyes small, adnate to head, behind level of mouth. No preorbital cavity. Maxillary, mandibular, and mental barbels attenuate, fairly elongate. Mouth capacious, wider than interorbital. Lips thick, the upper produced posteriorly in a lobe. Teeth villiform, in transverse, pluriserial bands on jaws and palatines. No naked symphyseal area in upper

jaw; no backward strip of palatine teeth; no granuliform teeth. Teeth of upper jaw overhanging lower jaw. Palatine teeth in small inner oval patches contiguous to diverging outer patches.

Gill-openings very wide, gill-membranes united across isthmus, 12 gill-rakers on lower limb of first branchial arch. Last branchiostegal ray not expanded. Body elongate. Axillary pore minute. Vent inconspicuous.

Dorsal buckler moderate, granulated, saddleshaped, in close contact with nuchal shield. Dorsal spine strong, subequal to postorbital, weakly serrated, the serrae directed downwards; none of the fin-rays produced. Origin of dorsal about mid-way between pectorals and ventrals. Adipose fin large, mostly over anal, but its anterior margin in advance of level of anal origin, its base longer than that of dorsal fin.

Base of anal less than head. Pectoral spine weakly serrated, shorter than dorsal spine, the fin long. Ventrals with narrow bases. Caudal strongly forked, free of anal.

Freshwater, New Guinea.

Cochlefelis differs from *Arius* Cuv. & Val., 1840 (tautotype, *Pimelodus arius* Hamilton-Buchanan, 1822, from India) in having a very differently shaped head and skull, the eyes being very small instead of very large; the dorsal spine has no long, soft prolongation and there are fewer anal rays than in typical *Arius*. The new genus differs from other Tachysurid genera in the combination of characters defined above.

COCHLEFELIS SPATULA (Ramsay and Ogilby, 1886).

Arius spatula Ramsay and Ogilby, Proc. Linn. Soc. N.S. Wales (2), i., May 25, 1886, p. 15. Strickland River, New Guinea. Holotype in Austr. Mus. Id. Weber, Nova Guinea, ix., 1913, pp. 538, 539 and 608. Id. Weber and Beaufort, Fish. Indo-Austr. Archip., ii., 1913, p. 296.

Netuma spatula Jordan and Seale, Bull. U.S. Bur. Fish., xxv., 1905 (December 15, 1906), p. 191.

Arius nudidens Weber, Nova Guinea, ix., 4, 1913, pp. 538, 604 and 608, fig. 15. Lorentz River, New Guinea. Id. Weber and Beaufort, Fish. Indo-Austr. Archip., ii., 1913, p. 294, fig. 120. Id. Hardenberg, Treubia, xv., 4, 1936, p. 369 (Digul River).

Tachysurus nudidens and *spatula* Fowler, Mem. Bish. Mus., x., 1928, p. 62.

On comparing the holotype of *spatula* with descriptions and figures of *nudidens* it is apparent that these two nominal species are synonymous. The slight differences in fin-counts and proportions of eyes and occipital shields are either due to different methods of measuring or may be accounted for by variation or changes with growth.

Range.—Strickland, Digul and Lorentz Rivers, southern New Guinea (freshwater).

TACHYSURUS (PARARIUS) BERNEYI, sp. nov.

(Fig. 8, No. 5.)

D.i., 7; A., 15; P.i., 10; V., 6; C., 15.

Head (38 mm.) 4, depth (30) 5 in length to end of middle caudal rays (152). Width of head (27) greater than its height. Eye, 7.5 mm.; inter-orbital, 18; snout, 13; width of mouth-opening, 16; maxillary barbel, 61; mandibular barbel, 40; mental barbel, 22.5; predorsal length, 54; inter-

dorsal, 40; pungent dorsal spine, 30; or with its extension, 43.5; pectoral spine, 32; depth of caudal peduncle, 10.5.

Head wedge-shaped. Eye with free lid. Interorbital broad and flat. Mouth well before level of eye. Premaxillary teeth villiform, pluriserial, in a continuous band. Mandibular band divided at symphysis. Vomerine and palatine patches of villiform teeth in contiguous rounded patches, without backward extensions.

Maxillary barbel reaching to below posterior dorsal rays. Mandibular barbel reaching to inner pectoral rays. Mental barbels reaching beyond gill-opening below head. Gill-membranes united across isthmus at oblique angle. 10 gill-rakers on lower limb of first gill-arch.

Cranial and occipital shields with small rounded granules, mostly embraced by smooth skin on top of head. Occipital shield longer than wide, subtriangular and with median ridge. Predorsal shield small, crescentic, hidden. Fontanelle lanceolate, longer than eye, tapering posteriorly.

Body rather robust. Lateral line obsolete before level of dorsal fin and without anterior granulation. Axillary pore conspicuous.

Dorsal spine weakly serrated with long cartilaginous extension. Adipose fin large, entirely over anal. Anal length subequal to its height and about half head. Pectoral spine serrated posteriorly, the fin pointed and nearly as long as head. Ventrals not reaching anal, their length equals interorbital. Caudal forked, the upper lobe longer.

Greyish above, yellowish to whitish below, tips of fins somewhat dusky. Eye bluish.

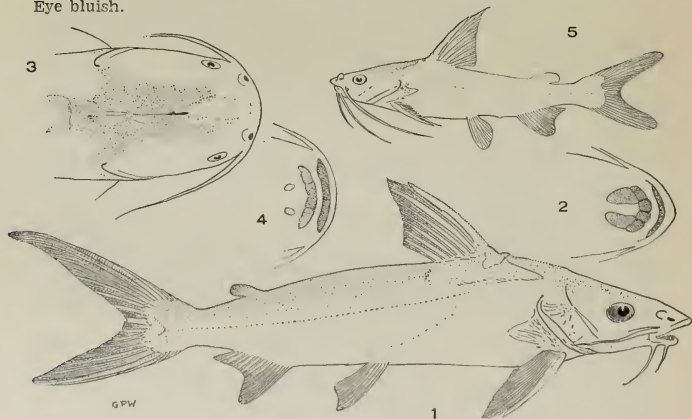


Fig. 8. Salmon Catfishes; No. 1, *Netuma thalassina jacksonensis*, holotype of subspecies, from Sydney; 2, palatal teeth of same; 3, *Tachysurus (Pararius) godfreyi*, holotype from Darwin; 4, palatal teeth of same; 5, *Tachysurus (Pararius) berneyi*, holotype from Flinders River, Queensland. (Block by courtesy of the Trustees of The Australian Museum).

Described and figured from the holotype of the species, a specimen 7 inches overall. Austr. Mus., Regd. No. I.13,076.

Locality.—Holotype and paratype (I.13,075) from pools of the Flinders River, near Hughenden and Richmond, Queensland (freshwater). Twelve smaller paratypes from Mapoon, western Cape York, Queensland, so the species is evidently estuarine and fluviatile.

Named in honour of Mr. Frederick L. Berney, the well-known ornithologist, who made a valuable collection of fishes in Central Queensland nearly thirty years ago.

This new species is allied to *T. (P.) proximus* (Ogilby, 1898), of which I recently figured a Broome specimen (Austr. Zool., ix., 4, December, 1940, p. 409, fig. 16), but differs in having much longer barbels, larger adipose dorsal fin, head wider than high, more elongate fins and different body-proportions. Other allied species are *leptaspis* Bleeker, 1863, *graeffei* Kner and Steindachner, 1867, *australis* Gunther, 1867, and, perhaps, *Neoarius curtisii*, Castelnau, 1878, from all of which *berneyi* differs in similar respects.

TACHYSURUS (PARARIUS) GODFREYI, sp. nov.

(Fig. 8, Nos. 3 & 4.)

D.i., 7; A., 16; P.i., 9; V., 6; C., 15.

Head (89 mm.) nearly 3.6, depth (41) 7.8 in length to end of middle caudal rays (320). Width of head (70) much greater than its height (about 39). Eye, 12 mm.; interorbital, 46; snout, 23; width of mouth-opening, 41; maxillary barbel, 78; mandibular barbel, 52; mental barbel, 30; predorsal length, 114; interdorsal, 88; pectoral spine, 57; dorsal spine, 49; depth of caudal peduncle, 20.

Eye small, elliptical, with free lid. Interorbital very broad and flat. Mouth a little before level of eye. All teeth villiform, none granular. Pre-maxillary teeth in continuous band. Vomerine teeth in contiguous patches, followed by an isolated small patch of palatine teeth behind. A symphyseal gap in mandibular teeth.

Posterior nostrils valvular. Maxillary barbel reaching pectoral base. Mandibular barbels reaching gill-openings below. Mental barbels short. Gill-membranes united across isthmus at oblique angle. A few short gill-rakers. Opercles smooth. Suture between operculum and interoperculum pronounced. Humeral process small, triangular, granulated. Cranial and nuchal shields coarsely granulated. Occipital process wider than long, with a median keel. Predorsal shield large, suboblong. Fontanelle moderate. Occipital groove shallow. Branchiostegal membrane ragged.

Body entirely smooth, depressed anteriorly, compressed posteriorly; back fairly level. Lateral line feebly developed on sides behind dorsal fin and without lower fork on tail. Axillary pore minute. Vent nearer ventral than anal base. Dorsal spine serrated near tip anteriorly (but not posteriorly) and with two rows of granules near its origin which merge into one row to the serrations. Adipose dorsal fin large, over anal fin, its base more than its height and 3 in interdorsal space. Anal base and height half length of head; anal border emarginate. Ventrals less than interorbital, shorter than dorsal and not quite reaching anal. Pectoral spine serrated behind. Caudal forked, upper lobe longer, but less than head. Dark greyish above, silvery below, fins yellowish, dorsals and pectorals infuscated grey.

Described and figured from the holotype, a specimen 320 mm. or 13 inches long, from Port Darwin, Northern Territory; coll. Hugh W. Christie and C. F. Godfrey, 1902 (Austr. Mus., Regd. No. I.5,270).

From *Pararius australis, proximus* and *graeffei*, the novelty differs in the shape of the cranial and predorsal shields, also in proportions and dentition. *Hexanematichthys leptaspis* or *leptocassis* Bleeker (Atl. Ichth., ii., 1862, p. 27, pl. lxxv., fig. 2) from S.W. New Guinea similarly differs and has more anal rays.

Arius latirostris Macleay, is another *Pararius* which lacks the isolated palatine tooth-patches and has a smaller predorsal shield, in these respects being like *berneyi* from Queensland.

Genus NETUMA Bleeker, 1858.

NETUMA THALASSINA JACKSONENSIS, *subsp. nov.*

(Fig. 8, Nos. 1 & 2.)

D.i., 7; A., 14; P.i., 11; V., 6; C., 15.

Head (84 mm.) 3.6, depth (60) about 5 in length to end of middle caudal rays (305). Width of head at opercles (55) subequal to its height. Eye, 15 mm.; interorbital, 38; snout, 31; width of mouth-opening, 35; maxillary barbel, 45; mandibular barbel, 28; mental barbel, 18; predorsal length, 115; interdorsal, 92; pectoral spine, 50; depth of caudal peduncle, 20.

Eye with free lid, except below and behind, where it is shelving. Interorbital broad and flat. Mouth well before level of eye. All teeth villiform, none granular. Premaxillary teeth in continuous band, sloping upwards and backwards. Mandibular series with a gap at the symphysis. Vomerine and palatine teeth in three contiguous patches on each side as figured. Vomerine teeth extending some distance backwards.

None of the barbels reaching gill-opening. Gill-membranes united across isthmus at oblique angle. Eight short gill-rakers on lower half of first branchial arch. Opercles with few venules or striae. Suture between operculum and interoperculum pronounced. Humeral process broad, with waved radiating ridges. Cranial and nuchal shields weakly granulated, covered by skin of head. Occipital process longer than wide, with a median keel. Predorsal shield with lateral and backward-extending wings. Fontanelle inconspicuous, lanceolate. Occipital groove fairly deep and long.

Body fairly compressed and elongated; back arched. Lateral line obsolete below dorsal fin and forked on tail, without anterior granulation. A small axillary slit. Predorsal length less than one-third length to end of middle caudal rays. Vent nearer ventral than anal base.

Dorsal spine serrated before and behind with two rows of granules towards its origin, longer than maxillary barbel. Adipose dorsal fin rather long, one-fifth of interdorsal space and situated over middle anal rays.

Anal base subequal to its height and less than half head; anal border concave.

Ventrals truncate, equal to interorbital, shorter than dorsal, and not reaching anal. Pectoral spine similar to dorsal. Caudal fin damaged and colour faded in the spirit specimen.

Described and figured from the holotype of the subspecies, a specimen one foot long to end of middle caudal rays (Austr. Mus., Regd. No. I.10,095), from Port Jackson, New South Wales. It is apparently a rare visitor to the

Sydney district, from which the Museum has a second Port Jackson specimen, 2 ft. 3 in. in length. This paratype agrees with the described example in general features, but has head 4 in length and ventral fins long, about equal to width of head; the upper caudal lobe is the longer but is less than length of head; these differences are probably sexual.

The Port Jackson type differs from true *Bagrus thalassinus* Rüppell (Neue Wirbelth. Abyssin., Fische, 1837, p. 75, pl. xx., fig. 2) from Massowah, Eritrea, in having the adipose fin farther forward in relation to posterior anal rays, and different proportions of depth in length, snout in head, etc., but otherwise agrees very closely.

Family LEPTOCEPHALIDAE.

POUTAWA HABENATA LONGICAUDA (Ramsay and Ogilby, 1888).

(Fig. 9.)

A young specimen, about 74 mm. long, and considerably more advanced than the *leptocephalus* figured by me (Rec. Austr. Mus., xx., 1937, p. 8, fig. 3) has the following characters:—

Upper jaw longer, snout acute; lower jaw very sharply pointed. Mouth reaching to below eye. Dentition not yet developed. No long larval teeth. Eye higher than long and much longer than interorbital width. Snout about $3\frac{1}{2}$ in head which is about $13\frac{1}{2}$ in length. Nostrils before eyes.

Body very elongate and compressed, its greatest height (about middle of trunk) being less than head, tapering to acutely pointed tail-tip. About 113 myotomes, of which 30 or more are predorsal, and about 50 preanal.

Small pectoral fins present behind gill-slits. Dorsal originating in anterior, anal in posterior half of fish, both fins with many rays well developed. A broad, rayed caudal fin surrounds tail-tip.

General colour pale horn, the eye blue and silvery. A double row of black chromatophores along belly to vent: anteriorly they are separated and the pairs easily distinguished (60 or so to below dorsal origin), but posteriorly the chromatophores coalesce into stripes which diverge and then converge at the anus. A single row of chromatophores along anal base, some fainter ones along dorsal base and middle of sides and tail. A V-shaped group of chromatophores, pointing forwards, on throat before pectorals.



Fig. 9. Little Conger, *Poutawa habenata longicauda*. Young, New South Wales.

Described and figured from a young example, about 74 mm. or nearly 3 inches long. Austr. Mus., Regd. No. IB.547.

Locality.—Jervis Bay, New South Wales; attracted to submarine light aboard the "Warreen", 7th October, 1940. Collected by Dr. D. L. Serventy, C.S.I.R. Marine Biological Laboratory, Cronulla.

Subfamily SCALANAGOINAE.

Genus SCALANAGO Whitley, 1935.

SCALANAGO LATERALIS Whitley, 1935.

Scalanago lateralis Whitley, Rec. Austr. Mus., xix., September 19, 1935, p. 218, fig. 2. Bondi, N.S. Wales. Types in Austr. Mus.

Mr. A. J. Fraser has presented a large specimen of this species from Middleton Beach, Albany, Western Australia, where it was dug out of sand on November 11, 1939. This greatly extends the range of the genus and species, hitherto known only from near Sydney, New South Wales. The specimen is 225 mm. or about 9 inches long and agrees in detail with the eastern ones, except that it is of record size and has the following characters. Maxillary hardly reaching to below middle of eye. Few, if any, teeth external to mouth-opening. Lateral line with about 119 cross-canals and with many pores over their courses; on most of the head the pores are more conspicuous than the underlying canals. Pectoral fins shorter than upper jaw, the margin more rounded. Head, 34 mm.; eye, 8; snout to vent, 79; snout to dorsal origin, 38. Colour pale pearly grey to horn yellowish. Unpaired fins with dark grey margins and thin pale borders. Snout gelatinous yellowish. Eye pale bluish.

New record for Western Australia. Probably the above differences may all be accounted for by growth, otherwise the western form will require a new subspecific name. Further specimens would be welcome, and it would be interesting to know if the species occurs in intermediate localities.

Family OPHICHTHIDAE.

Genus OPHICHTHUS Thunberg, 1789, *sensu lato*.

OPHICHTHUS DERBYENSIS, *sp. nov.*

(Fig. 10.)

Head (14 mm.) 18, depth (4) 64.5 in total length (258). Predorsal length, 22 mm.; preanal length, 81. Eye (1) 2.75 in snout (2.75) and slightly less than interorbital (1.1). Length of lower jaw nearly 4 mm.; of gape, 4.25; pectoral, 3.5 mm.



Fig. 10. Snake Eel, *Ophichthus derbyensis*. Holotype, Derby, W. Australia. Also dentition and head enlarged.

Head acutely pointed, upper jaw much longer than lower. A fleshy tip to lower jaws; no cirrhi. Eye small, adnate to skin. Anterior nostrils large and flap-like, in upper lip anteriorly; posterior nostrils not far behind, less conspicuous. Two or three teeth on intermaxillary, the largest a depressible fang. All teeth conic, recurved; none granuliform. A single row of vomerine canines with a group of enlarged teeth anteriorly. Maxillary teeth directed backwards, in more than one row. Mandibular teeth enlarged somewhat anteriorly, in one to three rows. Tongue attached to floor of mouth, only its tip free. Series of pores around eye and chin and on snout. Cleft of mouth reaching to behind eye. Gill-slits lateral, their openings subequal to eye and less than the distance between them. Jugostegalia present.

Body extremely elongate, smooth-skinned, slightly compressed, its width not much less than depth. Lateral line continuous. Anus in anterior third of fish. Dorsal fin originating just behind head, low for its entire

length. Anal similar to dorsal, but rays a little longer before end of tail. Pectorals present, many-rayed. Tail-tip hard-pointed, free of fins.

Coloration, after long preservation in alcohol, uniform brownish yellow, darker along back with a lighter area along each side of dorsal fin. Snout brownish. A brownish mark at rictus and another on each side of head posteriorly. Some dark blotches on dorsal and anal fins. No rings, spots or bands on body. No white spots on nape. Eye bluish.

Described and figured from the holotype, a specimen 258 mm. or 10½ inches overall. Austr. Mus., Regd. No. I.840.

Locality.—Derby, north-western Australia; C. Lees, 1886.

Allied to the Javanese *Ophichthus lumbricoides* (Bleeker, 1852), but not so elongate, with lower dorsal fin, and different dentition (compare my figure with Bleeker, Atlas Ichth., iv., 1864, p. 56, pl. clviii., fig. 3).

The proportions and dentition separate it from other described species of the genus.

Family MYCTOPHIDAE.

ELECTRONA RISSO SALUBRIS Whitley, 1933.

(Fig. 11.)

Here illustrated from the holotype of the subspecies (Regd. No. E.5,701), taken by the "Endeavour" in Victorian waters.

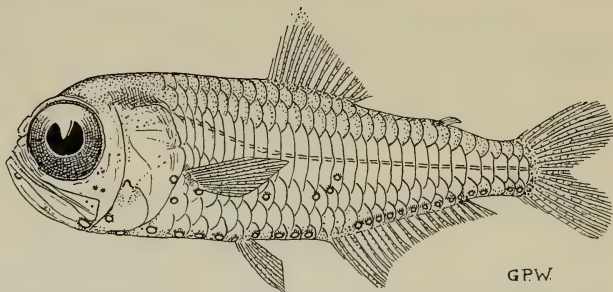


Fig. 11. Lantern Fish, *Electrona risso salubris*. Holotype of subspecies, Victoria.

DASYSCOPELUS NAUFRAGUS Waite, 1904.

? *Myctophum asperum* Richardson, Zool. Voy. Erebus & Terror, Fish., 1845, p. 41, pl. xxvii., figs. 13-15. Habitat ?

Dasyscopelus naufragus Waite, Rec. Austr. Mus., v., 3, March 11, 1904, p. 154, pl. xviii., fig. 3. Lord Howe Island.

One specimen (Austr. Mus., Regd. No. IA.8,023), 36 mm. in standard length, from New South Wales (C.S.I.R. Coll.; M.V. "Warreen" station, 104/38: about 20 miles east of Port Hacking, netted).

New record for Australia.

Family SYNGNATHIDAE.

LEPTONOTUS CARETTA (Klunzinger, 1879).

(Fig. 12.)

D. 24. Rings 17 + 42-44. Head $8\frac{1}{2}$ -9. Trunk about 2 [or 3] in total length. Snout $2\frac{1}{4}$ in head. Operculum with a short ridge anteriorly. Two nuchal rings with median lengthwise ridge. Lateral ridge plain to the anal shield; lacking on tail rings or only perceptible as an interrupted line. The dorsal fin begins at the anterior end of the anal ring. Pectoral and caudal fins present, anal fin very rudimentary. Body slightly higher than broad, anteriorly, almost quadrangular.

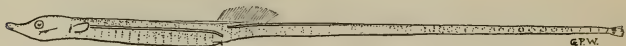


Fig. 12. Tortoiseshell Pipefish, *Leptonotus caretta*. Holotype, Victoria.

[In October, 1937, I examined and sketched the holotype of this species in the Württembergische Naturaliensammlung, Stuttgart. It was a female, No. 1,810. The dorsal ridges are not continuous with the upper caudal ridges. The medio-lateral ridge bends down on the 18th ring and is also distinct from the caudal ridges. There is a median carina along belly.]

Colour: Brownish black; on the back, here and there at intervals, with light tortoiseshell-like transverse blotches or crossbands at different intervals from one another, about twelve in number.

Length, four inches.

Locality.—Port Phillip, Victoria.

NANNOCAMPUS RUBER Ramsay and Ogilby, 1886.

(Fig. 13.)

Nannocampus ruber Ramsay and Ogilby, Proc. Linn. Soc. N.S. Wales, x., 4, April 3, 1886, pp. 757 and 760, and of Australian lists. Shark Reef, Port Jackson, N.S.W. Holotype in Austr. Mus. (Regd. No. B.9,199).

On working over some unclassified pipe fishes in the Australian Museum recently, I was delighted to find a second Port Jackson specimen of this curious species, hitherto known only from the female type. Although I have often collected fishes at the type locality I have never obtained any specimens of this rarity. Possibly it lives amongst red algae in fairly deep water? Now I take this opportunity of figuring the species for the first time and add further particulars to the rather brief original description.

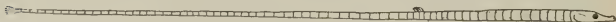


Fig. 13. Red Pipefish, *Nannocampus ruber*.
Holotype, Port Jackson, New South Wales.
Also head enlarged.

The holotype has the gill-slits fused, the true gill-opening being small and pore-like, superior. Anterior portions of eyes closer together than posterior. Lower profile of snout straight, upper concave. Top of head

with thick mucus canals which extend forwards to between nostrils. Operculum smooth. Dorsal fin on tail-rings 2 and 3.

Total length, 113 mm. Snout, nearly 3. Depth of head (2), a trifle less than depth or width of trunk, but equal to caudal (2). Preanal length, 35. Eye and caudal peduncle less than 1 mm.

The second specimen (Regd. No. IB.560) from South Head, Sydney, has a much longer dorsal fin, with about 26 rays and extending over 6 tail-rings, the snout is blunter and the caudal fin reduced, but in all other characters it agrees well with the type. It is apparently a female as there is no brood pouch.

SOLEGNATHUS ROBUSTUS NASO, subsp. nov.

D., 34; P., 30?. Rings, 26 + 55.

Head (c. 78 mm.), about 5.7 in length (c. 445), and 2.2 in trunk (175). Snout (50) 1.2 in head, its depth (8) 6.2 in its length. Eye more than 5 in snout.

Tail little more than distance between pectorals and vent, its depth behind dorsal, nearly $3\frac{1}{2}$ in base of that fin.

General characters as in *S. robustus* McCulloch, 1911, but dorsal base less than length of snout, and snout more elongated (with consequent alteration in head-proportions) than in the true South Australian *robustus*.

Medio-lateral ridge of body continuous with dorsal ridge of tail. Each scute with an elevated central blunt spine, from which radiate series of crude tubercles.

Described from the holotype of the subspecies, a slightly damaged specimen, about 17 inches long (Austr. Mus., Regd. No. I.14,837).

Locality.—Purchased in the fish market, Auckland, New Zealand, January 13, 1919; coll. Charles Hedley.

Family *ATHERINIDAE*.

ATHERINOSOMA MICROSTOMA LINCOLNENSIS, subsp. nov.

D.vii., 11; A.i., 11; P.i., 11; V.i., 5; C., 15; Sc., 39; Tr., 7.

Predorsal Sc., 16. Preanal Sc., 9. Interdorsal Sc., 8.

Head (12 mm.) 4.1; depth (6) 8.3 in standard length (50). Eye, 5 mm.; interorbital, 4; snout, 3; caudal peduncle depth, 3; pectoral fin, 8.5.

Form elongate, compressed; anterior portions of back and belly not keeled but flattened. Head scaly, except before the large eyes. One row of cheek-scales. Interorbital flat. Preopercular ridges without spines; operculum sinuously curved posteriorly. A series of pores on preorbital and above and behind eyes. Mouth moderate, reaching eye, with small teeth on jaws and apparently some microscopic ones on vomer. Mandibular rami very elevated. Premaxillary processes little over half eye-diameter. Gill-rakers slender, with tiny spines; about 15 on lower limb of first branchial arch. Gill-slits wide, isthmus very narrow.

Body covered with large cycloid scales which are not crenulated. About 40 transverse and less than 8 longitudinal scale-rows. Three rows of scales above lateral stripe. Vent well in advance of anal fin, situated between inner ventral rays.

Dorsal fins well separated, the first with seven slender spines whose height is less than interdorsal space; no produced spines. Origin of first dorsal slightly nearer muzzle than root of caudal. Anal base slightly longer than that of second dorsal, but shorter than its distance from the caudal. Anal origin in advance of that of second dorsal fin. Pectorals bluntly pointed, highly inserted, the third ray longest. Ventral bases in advance of level of first dorsal origin, their tips reaching beyond vent. Caudal forked.

Colour, in alcohol, pale yellowish above, white below. A broad silvery stripe along middle of sides. Each scale of back with black margin. Top of head dark with two prominent black blots over the brain. Opercles, mouth and middle of chin infuscated. Eye silvery or bluish. Bases of all fins dusky, though the fins themselves are whitish without dark markings. A black-edged silvery band extends from ventral bases, past the vent, to taper to the anal origin.

Described from the holotype of the subspecies, a specimen 50 mm. in standard length, the largest of seven of 37 to 50 mm., or $2\frac{1}{4}$ inches overall.

Locality.—Port Lincoln, South Australia. Specimens forwarded by Sir Gerald Mussen, of Melbourne, to Dr. D. L. Serventy. Austr. Mus., Regd. Nos. IB. 662 and 664.

Differs from its allies in fin-formulae, in having slender body, dorsals behind ventrals, and only about 40 transverse rows of scales.

Family MUGILIDAE.

GRACILMUGIL, *gen. nov.*

Orthotype, *Mugil ramsayi* Macleay, 1883.

Tropical Australian mullets with the following combination of characters, which distinguishes them from other Mugilidae. Snout shorter than eye. No adipose eyelid. Lower jaw terminal. Upper lip fairly thick. Maxillary not hidden. Mandibular angle obtuse. No teeth. Lips very finely ciliated, without papillae. Palate hard. Preorbital margin serrated. Slope of opercular margin steep. Gill-rakers extremely numerous, about as long as gill-fringes. Pseudobranchiae small.

Body compressed, form graceful; rostro-dorsal profile convex. Depth, $3\frac{1}{2}$ to 4 in standard length.

Scales in about 36 transverse rows. About 24 predorsal scales.

First dorsal origin much nearer caudal base than to snout. Scales extend on to soft dorsal and anal fins. Anterior half of anal before level of second dorsal. Eleven anal rays. Pectoral base above middle of body, a dark mark at its axil, no axillary scale; pectoral fin shorter than head. Depth of caudal peduncle about half length of head. Upper caudal lobe the longer. Coloration plain, pectorals not dusky.

Gracilmugil differs from true *Mugil* Linné, 1758 (logotype, *M. cephalus* L.), notably in having the upper lip thickened, eleven anal rays, and in lacking adipose eyelids.

GRACILMUGIL RAMSAYI (Macleay, 1883).

(Fig. 14.)

Mugil ramsayi Macleay, Proc. Linn. Soc. N.S. Wales, viii., 2, July 17, 1883, p. 208. Burdekin River, Queensland. Types (Regd. Nos. IA.5,944-5,946) in Austr. Mus., Sydney.

I select the largest of Macleay's specimen (200 mm. standard length or

10½ in. over all) as lectotype and figure it here (Austr. Mus., Regd. No. IA. 5,944).

It has D. iv./i., 9; A. iii., 11; P. i., 15; C., 12 branched rays.

Sc. 37 to hypural bend. L. tr. 13 below first dorsal origin. Labial cilia very fine, invisible to naked eye. The anal fin-formula is 3/11 (misprinted 3/1 in Macleay's description). Anal origin equidistant from origins of first

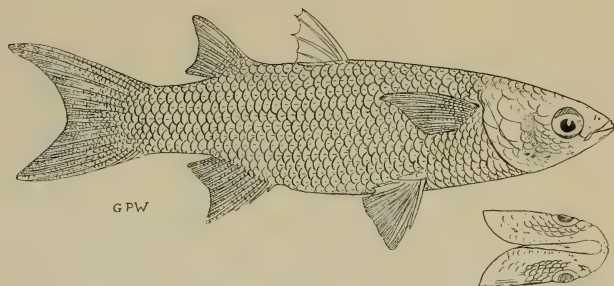


Fig. 14. Ramsay's Mullet, *Gracilimugil ramsayi*. Lectotype, Burdekin River, Queensland. Also ventral surface of head.

dorsal, ventral, and hypural joint. Other characters as defined for the genus or as described by Macleay.

Locality.—Burdekin River, Queensland; brackish water.

Genus *OEDALECHILUS* Fowler, 1904.

Oedalechilus Fowler, Proc. Acad. Nat. Sci. Philad., iv., 1903 (1904), p. 748. Orthotype, *Mugil labeo* Cuvier, Règne Anim., ed. 2, ii., April, 1829, p. 233, from the Mediterranean; figured by Cuvier and Valenciennes, pl. 310.

Mulletts with no adipose eyelids. Upper lip deep, crenulated and papillate; no cilia. Lower lip curled outwards and downwards, its edges crenulated or entire. No teeth. Otherwise mostly as in *Mugil*.

Key to Australian species:—

- A. Rostro-dorsal profile almost straight. Lower lip crenulated. A lenticular-shaped gap along chin between opercles anteriorly. Pectoral tip below first dorsal spine. *cirrhostomus*.
- AA. Back convexly arched. Lower lip entire. Opercles meeting along median ventral line. Pectoral not reaching to below first dorsal spine. *papillosus*.

OEDALECHILUS CIRRHOSTOMUS (Bloch and Schneider, 1801).

Mugil cirrhostomus Bloch and Schneider, Syst. Ichth., 1801, p. 121. *Ex* Forster MS. Pacific Ocean. *Id.* Forster, Descr. Anim. (ed. Lichtenstein), 1844, pp. 198 and 257. Tahiti (type) and Tanna, New Hebrides.

Mugil crenilabis Ogilby, Ann. Rept. Amat. Fisherm. Assoc., Qld., 1905-06

(1906), p. 9 (Southern Queensland). *Id.* Whitley, Rec. Austr. Mus., xvi, 1927, p. 11 (Michaelmas Cay, North Queensland).

Liza crenilabris McCulloch, Austr. Mus. Mem., v., 1929, p. 117. Not *Mugil crenilabris* Forskal, non-binom. = *Bonnaterre*.

D. iv./i., 8; A. iii., 9. Sc. 35. Tr. 10. Predorsal 17.

Head (20 mm.), 3.6; depth (17.5), about 4 in standard length (73). Snout (4), 5; eye (6), 3.3; interorbital (9); 2.2 in head. Posterior nostril lunate, anterior pore-like. No adipose eyelids. Upper lip deep, its edge crenulated, and its surface papillated, especially towards sides. No cilia. Cleft of mouth much broader than deep. Lower lip reflected downwards, crenulated. No teeth on jaws, vomer or palatines. Preorbital notched anteriorly, denticulated posteriorly. Maxillary narrow, hidden under preorbital. Gill-rakers numerous, slender, almost as long as gill-fringes. Free interopercular space on chin broad, lenticular.

Body compressed, rather elongate; rostrum-dorsal profile almost straight. Scales extend on to soft dorsal and anal fins. Axillary scales to pectorals and ventrals. Depth of caudal peduncle less than half length of head.

Origins of dorsal fins corresponding to 12th and 23rd body-scales. First dorsal origin nearer base of tail than to snout. First dorsal spine reaching more than half its distance from first dorsal ray. Anal origin in advance of level of second dorsal origin. Pectoral slightly shorter than head, reaching below first dorsal spine. Caudal emarginate. Coloration plain. Pectoral axil dusky.

Described from a specimen 73 mm. in standard length or 3 $\frac{1}{2}$ inches over all.

Locality.—Lord Howe Island ("Thetis" Expedition), Austr. Mus., Regd. No. I.4,081. New record for the island's fauna.

Allied to the Red Sea *crenilabris* *Bonnaterre*, but differs from Klunzinger's figure (*Fische des Rothen Meeres*, i., 1884, p. 132, pl. x., fig. 2) in having Sc. 35 instead of 41, different proportions of head and depth in standard length, and first dorsal origin much nearer root of tail.

OEDALECHILUS PAPILLOSUM (Macleay, 1883).

(Fig. 15.)

? *Mugil heterocheilos* Bleeker, Nat. Tijdschr. Ned. Ind., ix., 1855, p. 198. Batjan, East Indies. *Id.* Fowler, Mem. Bish. Mus., x., 1928, p. 126.

Mugil papillosus Macleay, Proc. Linn. Soc. N.S. Wales, viii., 2, July, 1883, p. 270, fig. of head. Normanby Island, New Guinea. Types in Austr. Mus.

? *Mugil papillosus* Tosh, Parlt. Rept. Mar. Dept., Qld., 1902-03 (1903), p. 19, pl. ii., fig. 3 (Moreton Bay).

Mugil heterochilus Weber and Beaufort, Fish. Indo-Austr. Archip., iv., 1922, p. 258. *Id.* Duncker and Mohr, Mitt. Zool. Mus. Hamburg., xlii., 1926, p. 130 (New Pomerania and Admiralty Iss.).

Liza papillosa Jordan and Seale, Bull. U.S. Fish. Bur., xxv., 1905 (1906), p. 218. *Id.* McCulloch, Austr. Mus. Mem., v., 1929, p. 117.

The largest of three co-types of *Mugil papillosus* Macleay, in the Australian Museum (Regd. No. I.13,392) is now designated lectotype and described and figured here.

This species differs from *crenilabis* and *cirrhostomus* in having no crenulations along lower lips.

D. iv./i., 8; A. iii., 9; P. ii., 14. Sc. 35. Tr. 10. Predorsal 20.

Head (55 mm.), 4; depth (59), 3 in standard length (219). Snout (12), 4.6; eye (15), 3.7; interorbital (23) 2.4 in head.

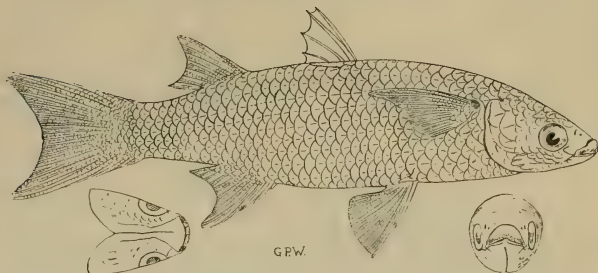


Fig. 15. Fringed-lipped Mullet, *Oedalechilus papillosus*. Lectotype, Normanby Island, New Guinea. Also ventral and front views of head.

Nostrils oval, posterior larger. Interorbital roundly convex. Eye large, without adipose lids, $1\frac{1}{2}$ in postorbital. Upper lip deep, its lower half with several rows of papillae. Lower lip entire, neither papillated nor crenulated; symphyseal knob double. No cilia or teeth. Preorbital notched anteriorly, weakly denticulated posteriorly. Maxillary hidden under preorbital or its tip only showing. Opercles meeting along median ventral line; posterior margin of operculum subvertical.

Body compressed, rather deep, the dorsal profile convexly arched. Scales extend on to soft dorsal and anal fins. Axillary scales present. Depth of caudal peduncle (24 mm.) less than half head.

Origins of dorsal fins corresponding to 12th and 22nd body-scales. First dorsal fin about midway between snout and caudal base. First dorsal spine reaching more than half its distance from first dorsal rays. Anal origin in advance of level of second dorsal origin. Pectoral slightly shorter than head, not reaching to below first dorsal spine. Caudal emarginate.

Coloration plain silvery, dark along the back; pectoral axil with a dusky blotch.

Described and figured from the lectotype of *Mugil papillosus* Macleay, a specimen 219 mm. in standard length or nearly 11 inches over all.

Locality.—Normanby Island, New Guinea; fresh water.

Macleay counted D. 4, $1\frac{1}{7}$, but in two of the types there are eight rays. He also counted the small scales behind the hypural fold to give "L.lat. 38".

Allied to *Mugil heterocheilos* Bleeker, but has comparatively larger scales, more convex back, and more papillae on upper lip; however, these differences may be found to be covered by variation, in which case Bleeker's name has priority.

Genus *SQUALOMUGIL* Ogilby, 1908.

Squalomugil Ogilby, Ann. Qld. Mus., ix., October 14, 1908, pp. 3 and 28.
Orthotype, *Mugil nasutus* De Vis.

Mulletts in which the snout is produced over the undershot mouth giving a shark-like appearance to the head. Eyes small, probably protruding and mobile in life, with obsolescent adipose lids. No true teeth. Axis of body slightly curved, convex upwards. Pectoral fins large. About thirty lateral scales; 12 predorsal scales on body plus five along top of head. Allied to *Rhinomugil* Gill (Proc. Acad. Nat. Sci. Philad., 1863, p. 169. Orthotype, *Mugil corsula* Ham.-Buch.), but differs in having much larger scales (about 30 instead of about 50), lower eye, curved axis, and different relative positions of fins, judging from illustrations in Hamilton-Buchanan, Eydoux and Souleyet, Day, and Hora. The Australian Museum has a Calcutta specimen.

SQUALOMUGIL NASUTUS (De Vis, 1883).

(Fig. 16.)

Mugil nasutus De Vis, Proc. Linn. Soc. N.S. Wales, vii., 4, April, 1883, p. 621.
Cardwell, Rockingham Bay, Queensland.

Squalomugil nasutus Paradise & Whitley, Mem. Qld. Mus., ix., 1927, p. 96
(Adam Bay, Northern Territory), and of modern authors.

Now figured for the first time from one of De Vis' co-types, Regd. No. I.12,693, nine inches in total length, in The Australian Museum. De Vis' description differs a little from this specimen; he overlooked the minute first anal spine, whilst in this co-type the origin of the first dorsal fin is nearer eye than caudal. Head, 50 mm.; depth, 40; standard length, 188; snout, 11; eye, 7; and interorbital, 10. Coloration not described, now faded; pectoral axil plain.

This species ranges from north Queensland to the Northern Territory and is doubtless a good food fish, growing to at least ten inches long. Nothing has been recorded about its habits, but its biology may be similar to that of its Indian ally, *Rhinomugil corsula*, of which Hora (Journ. Nat. Hist. Soc., Bombay, xl., 1, 1938, p. 62, coloured plate and 3 figs.) has given a valuable and interesting description.

Since the above was written, Mr. T. C. Marshall, of the Queensland Museum, has courteously sent me a copy of some field notes made during July, 1941, for Mr. George Coates, of Townsville, by Mr. William Watkins, of Cardwell, from which I quote the following:—

"... There are plenty of them just about our area, but I have not noticed them anywhere else; only on one occasion whilst on my return from Brisbane, some 3 years ago. Whilst crossing what I should say is the Saint Lawrence River I noticed some small ones coming up with the making tide. . . .

"I cannot say I have seen them up to 12 inches. About 8 to 10 inches as far as I know would be about the largest size I can call to memory. They are exactly as described by you. Their eyes are really on top of their head, and they swim always with the greater portion of the head and eyes out of water. When disturbed they dive along just under water in short advances just a few yards and then to the surface again. They frequent mud flats or banks and live entirely on mud. They are always full of mud

and thus we know them as Mud Mullet. Where a mud bank say dips about 200 feet to the foot they can slide along till they are right out of water, and after puddling with their snout in the mud for a few minutes slide back into water. They are never found in deep water at all, and although they frequent our locality (a few miles either side of the town and you never see them). They are very hard to catch with an ordinary bait net, for they just slide over the cork-line. A casting net is the only way outside shooting them. I am of the opinion they like the Burnett Salmon (*Ceratodus*), are a lung fish, and, like the "gator", etc., must have air, and very frequently I have caught them for bait as they are good Barra bait. Have put them in a bag to keep them alive and have found they have died after being submerged for a time. They apparently must have to come to the surface for air. They are shaped like a mullet, only more curved. . . .

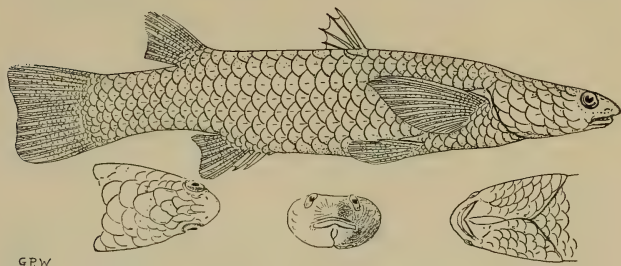


Fig. 16. Shark Mullet, *Squalomugil nasutus*. Co-type, Cardwell, Queensland. Also top, front and ventral surface of head.

"Well, I am railing to-morrow the mullet specimens, but they are a poor lot. I left home at 7 a.m. for Saltwater Creek armed with the cast net. There were not a great number up there. Why, I cannot say. Well, after chasing them for miles I fluked only one small one. They are too timid and the net landed always feet behind them. They seem more frightened than usual. I have caught a few with a cast net, but mostly shot them. I got home for lunch and got my shot-gun and went towards the One Mile Creek. There were not a great number about—mostly very small ones. At any rate, I shot about eight of them and have put them in the specimen tin. . . . I have seen them in big numbers—mostly in N.E. weather and in the summer months. I have not noticed them north of Wreck Creek and south of the One Mile Creek. Wreck Creek is 5 miles north of Cardwell, and One Mile Creek $1\frac{1}{2}$ miles south of town. They do not go up the creeks, but congregate around the mud banks at the mouths and on the mud flats between both places. I have also seen them in Missionary Bay, which is a big shallow bay like our own foreshore. They are rarely seen alone—mostly in small schools, about 6 to 12. They will swim slowly north or southwards till they find another small bunch, and so on, till they congregate into a school; then they apparently split up again and so on. There appears to be two kinds; whether male or female I do not know. Some have a more pointed nose than others. . . .

"They can jump along in small jumps of a foot or so, but most dive

along in small advances, about 3 feet at a time, that is, when disturbed, but when not disturbed swim along with portion of head and eyes out of water. They have no windbag like other fish, and will drown very quickly if kept under water and cannot live out of water. . . ."

Genus *MUGIL* Linné, 1758, *sensu lato*.

MUGIL DUSSUMIERI, *auct.*

(New Hebrides form.)

D.iv./i., 8; A.iii., 9; P.ii., 14; V.i., 5; C., 12 or 13. Sc. 30. Tr. 10. About 18 predorsal scales.

Head (61 mm.), 3.8; depth (66) 3.5 in standard length (235). Snout (14), 4.3; eye (15), 4; interorbital (30) 2 in head.

Posterior nostril a lunate slit, anterior pore-like. Scales of head cycloid, some with mucous grooves. Snout shorter than eye. Adipose eyelids present, partly covering eye. Interorbital half head-length. No definite notch between nostrils to accommodate the upper lip, which is terminal, thick. Maxillary mostly hidden by preorbital. Lips entire, without cilia or papillae. Symphyseal knob in lower jaw. Mandibular angle obtuse. No teeth on palate, but microscopic teeth along lips. Margins of preorbital serrated. Slope of opercular margin steep. Opercles quite separated below head by isthmus, the interopercular space open, tapering slightly anteriorly and posteriorly. Gill-rakers numerous, decreasing rapidly in size anteriorly. Pseudobranchiae moderate.

Body robust, deep; rostrum-dorsal profile rising convexly. Depth about $3\frac{1}{2}$ to nearly 4 in standard length.

First dorsal origin mid-way between snout and caudal base. Second dorsal origin about opposite 22nd scale. First dorsal origin mid-way between snout and caudal base. Axillary scales large at pectorals and ventrals. Scales of body with crenulated membranous borders. Scales extend on to proximal parts of fins, except first dorsal and ventrals. Anterior half of anal before level of second dorsal. Nine anal rays. Pectoral fin shorter than head, lower part of its base about level of middle of body; no definite dark mark at axil. Depth of caudal peduncle less than half head. Caudal emarginate, its upper lobe slightly longer than lower. Coloration plain, pectorals not dusky.

Described from the largest of six specimens, 3 to 12 inches over all, from the New Hebrides, in The Australian Museum (Regd. Nos. I.4,302, 6,374 and 13,759 to 13,761 from various donors. Only I.6,374 has a precise locality: Eraker Lagoon).

In young specimens, the maxillary is completely hidden by preorbital and the teeth are invisible. The crenulated margins of the body-scales are unsculptured in young, granulated in adult.

Family *GADIDAE*.

Genus *AUSTROPHYCIS* Ogilby, 1897.

AUSTROPHYCIS MEGALOPS Ogilby, 1897.

(Fig. 17.)

Austrophycis megalops Ogilby, Proc. Linn. Soc. N.S. Wales, xxii., 1, September 17, 1897, p. 91. Maroubra, New South Wales. *Id.* McCulloch, Austr. Zool., ii., 2, 1921, p. 32, and of lists.

Here figured from the holotype (Regd. No. I.3,655) in The Australian Museum. The specimen is very shrivelled about the thorax, the skin is spongy and most of the scales are missing. The anal fin appears to originate below the first dorsal fin rather than the dorsal interspace, as stated by Ogilby; practically all the fin-rays are simple and articulated. The opercles are smashed and the ventral fins damaged—I cannot detect more than two ventral rays. Anal fin with anterior rays lengthened but



Fig. 17. Fork Beard, *Austrophycis megalops*. Holotype, Maroubra, New South Wales. Also dentition.

not separate from the posterior, but it is now difficult to determine the exact contour of the fins.

Colour, brownish, with dark edges to unpaired fins.

I have searched Maroubra beach, near Sydney, regularly for years without finding a second specimen. Ogilby's original label has "Mauritius" crossed out and "Maroubra" substituted. However, there is no reason to doubt the Australian locality, especially as no species like the present one appears to have been recorded from Mauritius.

Family BREGMACEROTIDAE.

BREGMACEROS NECTABANUS, *sp. nov.*

(Fig. 18.)

Bregmaceros maclellandi of Australian authors, non Thompson, 1840.

Head rounded with spongy skin which even extends over eyes and opercular spines. Upper jaw the longer, maxillary reaching to below hinder part of eye. Fine teeth. No barbel.

Head, 5.5 mm.; depth of body, 5; mouth, nearly 3; standard length, 33 mm. Eye, 1.5; interorbital, less than 1 mm.; pectoral, 4 mm. Depth of body less than length of head or height of anterior dorsal and anal rays, over 6 in standard length. Scales regular, small.

D., $1/14 + 16 + 20 = 50$. A., $19 + 11 + 23 = 53$. Sc. 73. Tr. 17. First dorsal ray and the ventral fins depressible into channels. Interior ventral rays fringed.

General characteristics of *B. maclellandi*, but the free median dorsal and anal rays not so dwarfed.

Yellowish-white with a brownish stripe along each side of back.

No dark markings on fins.

Described and figured from the holotype, a specimen $1\frac{1}{4}$ inches long, from Darwin, Northern Territory.

Differs from its congeners in having snout slightly less than eye and

interorbital notably less than eye, in fin and scale formulae. The pallid colour and dorso-lateral stripe and lack of dusky areas on fins are characteristic.

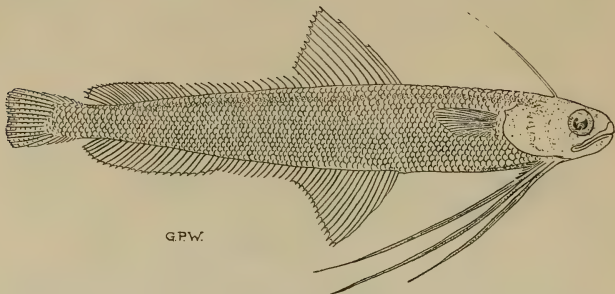


Fig. 18. Unicorn Cod, *Bregmaceros nectabanus*. Holotype, Darwin, Northern Territory.

Family HOLOCENTRIDAE.

HOLOCENTRUS CORNUTUS Bleeker, 1853.

Holocentrum cornutum Bleeker, Nat. Tijdschr. Ned. Ind., v., 1853, p. 240. Ceram and Amboina. *Id.* Marshall, Mem. Qld. Mus., xii., 1941, p. 55.

One (Austr. Mus., Regd. No. IA.2,150), 128 mm. in standard length, from the Great Barrier Reef, Queensland, between 17° and 19° S. Latitude (coll. W. E. J. Paradise, 1924).

HOLOCENTRUS CORNUTUS MELANOSPILOS Bleeker, 1858.

Holocentrus melanospilos Bleeker, Act. Soc. Sci. Indo-Neerl., iii., 1858, Visch. Ambon., p. 2. Amboina.

A specimen of this variety (IA.2,151), 136 mm. in standard length, from the Great Barrier Reef, Queensland, between 17° and 19° S. Lat. (coll. W. E. J. Paradise, 1924). Both forms are figured in Bleeker's "Atlas Ichthyologique", ix., 1877, pl. ccclix.

New record for Australia.

HOLOCENTRUS PRASLIN (Lacépède, 1802).

Perca praslin Lacépède, Hist. Nat. Poiss., iv., 1802, pp. 397 and 419. New Britain.

Holocentrus praslin Jordan and Seale, Bull. U.S. Bur. Fish., xxv., 1905 (1906), p. 225, fig. 26.

Holocentrus ruber McCulloch, Austr. Mus. Mem., v., 1929, p. 133, and of Australian authors. Not "*Sciaena rubra, ataja*" Forskaal, 1775, non-binomial, from the Red Sea.

Br., 8; D. xi./13; A. iv., 9; P. i., 12; V. i., 7. C. 18. Sc. 36. L. tr., 2½/1/6. Predorsal, 6.

Head (38 mm.), 2.7; depth (37), 2.8 in standard length (104). Eye (14), 2.7; interorbital (9), 4.2; snout (7), 5.4; depth of caudal peduncle (10), 3.8 in head. Fourth dorsal spine, 18; third anal spine, 24 mm.

Maxillary strongly ridged, reaching to below anterior half of eye; lower jaw included. Upper profile strongly convex, lower straight, slightly oblique. Villiform teeth on jaws, vomer and palatines. Premaxillary processes shorter than eye. Eye large, much longer than snout. Four ridges between eyes and fan-like occipital ridges. Nasal openings without spines. Nasalia ending in divergent spines anteriorly. Preorbital and suborbital strongly denticulated. Five rows of cheek-scales. One row of opercular scales. Preoperculum serrate with strong spine at angle reaching beyond gill-opening. Two enlarged opercular spines with three less produced lower ones. About 10 gill-rakers on lower limb of first branchial arch.

Body compressed, covered with strongly ctenoid scales. The least height of the short tapering caudal peduncle is about $1\frac{1}{2}$ in its length. Membrane of first dorsal fin incised. Fourth dorsal spine longest, but shorter than penultimate one. Third anal spine very long and strong. Pectorals and ventrals subequal, as long as eye and snout. Caudal forked.

Colour, in alcohol, straw yellowish to silvery, with seven dark brown stripes along body. The first expands to a blotch below second dorsal fin, the second enlarges just before caudal root extending over median rays, the sixth forms a blotch over anal fin.

Dark blotches, adjacent to cream markings, between first, second and third; also ninth, tenth and eleventh dorsal spines. Upper and lower caudal rays brownish, also membranes between third anal spine and second anal ray. Ventral tips dusky. Eyes bluish and yellowish.

Described from a specimen, 104 mm. in standard length, or 5 inches over all, from the Northern Territory of Australia (Rev. W. S. Chaseling); Austr. Mus., Regd. No. IA.8,098.

Other specimens, up to 10 inches long, are in the Australian Museum, from various parts of Queensland: Hayman Island (IA.6,006), North Barnard Island (IA.2,149 and 2,242), Howie Reef (IA.2,226), Lindeman Island (IA.7,485 and 7,878), also a Wide Bay example (E.1,500), taken by the "Endeavour". The Queensland Museum has one from Prince of Wales Island, north Queensland.

Genus *HOLOTRACHYS* Günther, 1873.

HOLOTRACHYS LIMA (Cuv. & Val., 1831).

Myripristis lima Cuvier and Valenciennes, Hist. Nat. Poiss., vii., 1831, p. 493. Mauritius.

Myripristis humilis Kner and Steindachner, Sitzungsber. Akad. Wiss. Wien., liv., 1866, p. 357, pl. i., fig. 1. Samoa.

Myripristis (Holotrachys) lima Günther, Journ. Mus. Godeff., ii., 7, Fische der Südsee, 3, February, 1874, p. 93, pl. lxiii., fig. A.

Harpagosea rosea De Vis, Proc. Linn. Soc. N.S. Wales, viii., 4, February 21, 1884, p. 447. South Sea Islands.

Myripristis carnea Ramsay and Ogilby, Proc. Linn. Soc. N.S. Wales (2), i., August 23, 1886, p. 474. Admiralty Is.

Holotrachys lima and *roseus* Jordan and Seale, Bull. U.S. Bur. Fisher., xxv., 1905 (1906), p. 222, fig. 25.

This species is distinguished by having about 36 to 47 lateral scales. Kner and Steindachner's paper is not available to me.

De Vis' description of *Harpagosea rosea* agrees very well with Günther's description and figure of *Holotrachys lima*, although De Vis seems to have

overlooked the minute first anal spine. *Harpage* thus becomes a synonym of *Holotrachys*, and *rosea*, like *Myripristis carneus* Ramsay and Ogilby, apparently equals *lima*.

HOLOTRACHYS OLIGOLEPIS, sp. nov.

(Plate i., fig. 19.)

D., xii./14; A. iv., 11; P. i., 14; V. i., 7; C., 17; L. lat., 32. L. tr., 4/1/7½. About 5 predorsal scales.

Upper profile ascending evenly, flat along back and descending steeply below soft dorsal. Lower profile similar but less convex.

Head (52 mm.), 2.5; depth (60) 2.2 in standard length (131). Eye (15), 3.4; interorbital (9), 5.7; snout (14), 3.7; depth of caudal peduncle (12) 4.3 in head. Third dorsal spine, 25 mm.; third anal spine, 20 mm.

Maxillary and supramaxillary rugosely ridged and reaching to posterior portion of eye. Lower jaw slightly longer than upper, its tip fitting into a symphyseal excavation. Coarse teeth on each side of jaws, some of them exterior to gape (anterolaterally on premaxilla and anteriorly on mandible). Smaller teeth on vomer and palatines. Premaxillary processes shorter than eye. Eye large, equal to snout. Nasalia almost meeting over premaxillary processes and ending anteriorly in several spines, some of which overhang upper lip. They are very rugose, like all the bones of the head, including the supraorbital and two interorbital ridges. Preorbital strongly and irregularly dentate, continuous with postorbitals. Both limbs of preoperculum strongly toothed and with a short, acute, somewhat enlarged spine at angle, not reaching gill-opening. Four or five rows of cheek-scales. Opercles crossed by ridges ending in marginal spines, of which several are a little enlarged at angle. One row of opercular scales. Pseudo-branchiae present. About ten gill-rakers on lower part of first branchial arch.

Body oval, fairly compressed, covered with strongly ctenoid scales which do not extend on to fins. Height of caudal peduncle about half its length.

Membrane of first dorsal fin incised; spines striated, the third spine longest, much longer than the rays of the rounded second dorsal fin; last dorsal spine little shorter than penultimate and joined by membrane to first dorsal ray. Third anal spine enlarged, subequal to longest anal rays. Pectorals and caudal lobes rounded; ventrals pointed. Ventral and anal spines striate.

Colour, after long preservation in formalin, brownish, with traces of nine broad dusky stripes along scale-rows; dorsal membranes whitish; eye bluish; no spots on body or fins. In life, it may have been red with, perhaps, some white or cream on first dorsal membranes.

Described and figured from the unique holotype of the species, a specimen 131 mm. in standard length or six inches over all.

Locality.—Western Australia, trawled between Cape Naturaliste and Geraldton, in from 20 to 100 fathoms; F.I.V. "Endeavour". Regd. No. E.2,479.

Differs from other *Holotrachys*, notably in having a less deep body, larger and fewer scales, and less extensive maxillaries.

Family APOGONIDAE.

Genus SIPHAMIA Weber, 1909.

Siphamia Weber, Notes Leyden Museum, xxxi., 2, 1909, p. 168. Haplotype.

S. tubifer Weber, from Timor. *Id.* Weber, Siboga Exped., lvii., Fische, 1913, pp. 219 to 221, 243 to 246 and 672, pl. x., figs. 9a-b, and fig. 61. *Id.* Jordan and Jordan, Mem. Carneg. Mus., x., 1, 1922, p. 44. *Id.* Weber and Beaufort, Fish. Indo-Austr. Archip., v., 1929, p. 355, fig. 84. *Id.* Fowler and Bean, Bull. U.S. Nat. Mus., 100, x., 1930, p. 142.

SIPHAMIA CUNEICEPS, sp. nov.

(Fig. 20.)

D. vi./i., 7 or 8; A. ii., 8; P., 12; V. i., 5; C. 17.

Head (15 mm.), 2.6; depth (10), 3.9 in standard length (39). Eye (4), 3.75; interorbital (4.5), 3.3; snout (5) 3 in head.

Head, wedge-shaped, pitted above, the convex interorbital and snout with mucous canals; other pores and canals around eyes, chin and preoperculum. Eyes large. Snout long and pointed. Nostrils large. Mouth large, reaching to below posterior part of eye. Lower jaw longer. No canines, only fine villiform teeth on jaws, vomer and palatines. Tongue edentulous. Both limbs of preopercle entire. Operculum with two obsolescent spines. Predorsal profile obliquely sloping. Six long gill-rakers on lower half of first branchial arch.

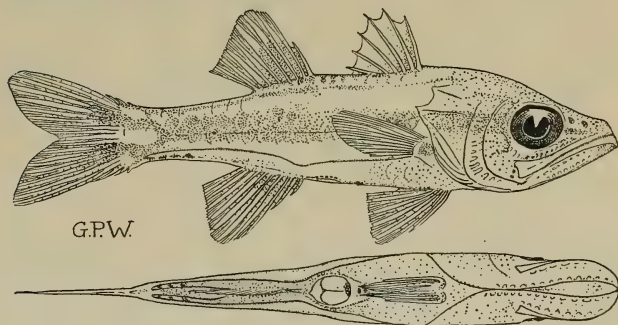


Fig. 20. Siphon Fish, *Siphamia cuneiceps*. Holotype, Queensland.
Ventral surface, below.

Depth of body much less than length of head. Body compressed, rather elongate. A silvery tube (prolongation of peritoneum) along each side to the short and deep caudal peduncle. Scales large, deciduous, ciliated. L.lat. apparently complete, probably with less than 20 scales. Most of scales missing in my specimens, but predorsal ones not keeled. Vent just in front of anal fin; opening of oviduct large, with two pinkish lappets. Dorsal fins not connected at base, none of the spines produced or serrated. Caudal forked.

Brownish-pink with broad lateral infuscated area suggesting a dark median stripe and a smaller similar band above and below along sides and head; the central band splits into two on root of tail. Silvery tubes out-

lined blackish. Fins white, proximal part of soft dorsal and anal with dense blackish speckles. Lower surface of caudal peduncle dusky. Tongue blackish at sides. No ocelli.

Described from the holotype of the species, a spawning female, 39 mm. in standard length or $1\frac{1}{2}$ inch over all, one of three specimens 36 to 39 mm. in standard length. Austr. Mus., Regd. No. IB.1,016.

Locality.—Off Fraser Island, Queensland; $24^{\circ} 52$ min. S. lat. by $152^{\circ} 48$ min. E. long.; Agassiz trawl, 15 mins.; 15 fathoms, 14/9/1938, M.V. "Warreen". Presented by Dr. H. Thompson, C.S.I.R., Marine Biological Laboratory. Differs from *Siphamia tubifer* Weber, 1909, from Timor, in having comparatively longer head and more elongate body, different fin-formulae, dentition, etc. True *Siphamia* and *Fodifoa* have much deeper bodies than my Frazer Island species. *Adenapogon* and *Scopelapogon* have more numerous gill-rakers, cycloid scales and lower pectoral insertion.

Family GYMNAPOGONIDAE.

Genus GYMNAPOGON Regan, 1905.

Gymnapogon Regan, Ann. Mag. Nat. Hist. (7), xv., 1905, p. 19. Type, *G. japonicus* Regan. *Id.* Regan, Ann. Mag. Nat. Hist. (8), xii., 1913, p. 118. *Id.* Jordan, Classif. Fish., 1923, p. 188. *Id.* Schultz, Proc. U.S. Nat. Mus., lxxxviii., 1940, p. 406. *Id.* Regan, Copeia, 1940, 3, p. 173.

Henicichthys Tanaka, Zool. Mag., Tokyo (Dobuts. Zasshi), xxvii., 1915, p. 568. Orthotype, *H. foraminosus* Tanaka, from Japan. Described in Japanese. *Id.* Tomiyama, Jap. Journ. Zool., vii., 1936, p. 50. *Id.* Tanaka, Fish. Japan, 1936, p. 270. *Id.* Fowler, Notulae Nat., xxvi., 1939, p. 1. *Id.* Herre, Copeia, 1939, 4, p. 200.

Hemicichthys (sic) Jordan, Classif. Fish., 1923, p. 203 (translation of Tanaka's description).

Australaphia Whitley, Mem. Qld. Mus., xi., 1, 1936, p. 48. Orthotype, *A. annona* Whitley, from Queensland.

This puzzling little genus has been placed in a different family by almost every author who has dealt with it, and it has been described under three generic names, the oldest of which becomes the root for the family name. It is apparently a highly specialized ally of the Apogonoids. Dr. Katsuzo Kuroshima, whilst working with Professor Carl L. Hubbs, in Michigan, found that my *Australaphia* was a *Henicichthys* and showed me specimens at Ann Arbor to prove his discovery. So far as I know this synonymy has not been published, but I am now unable to communicate with Dr. Kuroshima, who has returned to Japan, so place this on record with full acknowledgment to him. Recently, Regan has demonstrated the identity of *Henicichthys* with his *Gymnapogon*. The synonymy and bibliography of this genus are tabulated above for the first time.

There are several species in Pacific Seas: *G. japonicus* (*foraminosus*), *philippinus*, and *annona*. The Australian Museum has some old specimens of this genus from Cairns Reef, near Cooktown, Queensland, and the New Hebrides, which had been provisionally identified as "Amiidae" and came to light during recent overhauling of the stored collections.

Family CARANGIDAE.

BASSETINA, *gen. nov.*

Zamora Whitley, Rec. Austr. Mus., xviii., 3, March 25, 1931, p. 108. Ortho-

type, *Caranx hullianus* McCulloch, Rec. Austr. Mus., vii., 4, August 30, 1909, p. 319, pl. xci., from Freshwater Beach, near Sydney, New South Wales. Type in Australian Museum (I.9,261). Preoccupied by *Zamora* Roewer, Abh. Naturw. Ver. Bremen., xxvi., 1928, p. 541, a genus of Arachnida.

I notice from Neave's "Nomenclator Zoologicus" that my genus *Zamora* is preoccupied. I therefore propose the above substitute. Orthotype, *Caranx hullianus* McCulloch = *Bassetina hulliana*.

Named in honour of Mr. Arthur Francis Basset Hull, M.B.E., veteran zoologist and doyen of the Royal Zoological Society of New South Wales, who collected the still unique holotype over 33 years ago.

Family ARRIPIDAE.

ARRIPIS TRUTTA (Bloch & Schneider, 1801).

In the Museum National d'Histoire Naturelle, Paris, in October, 1937, I saw the type of *Lepidomegas mulleri* Thominot, 1880, from Melbourne. This genus had been made a synonym of *Seriola* by Jordan and others, yet I could never reconcile Thominot's description with any Australian Seriolid. Seeing the type-specimen explained why: it was a Kahawai with 16 dorsal rays and 51 scales on the lateral line to the hypural joint, and thus *Lepidomegas mulleri* becomes a synonym of *Arripis trutta*, both genus and species, and has no relationship to *Seriola*.

If the south-eastern Australian "Salmon" be distinct from the New Zealand type, it may assume the name *marginata* Cuv. & Val., 1828, originally described as a *Perca*. The Western Australian form may represent a new subspecies which has yet to be defined and named.

Family LEIOGNATHIDAE.

EQUULA, spp.

The old and damaged holotype of *Equula serrulifera* Richardson, 1848, from "Australia" was examined by me in the British Museum. It had depth less than 2 in standard length, small teeth, dorsal spine not abnormally serrated, and, as far as I could make out from the smashed head, the supraorbital was smooth. It was very like *E. decora* De Vis, 1884, but had longer anal spine and slightly deeper body.

In Stuttgart, in 1937, I saw the type of *Equula splendens* var. *novemaculeata* Klunzinger, 1879, from the Endeavour River, Queensland. This was apparently only an abnormal specimen of *decora* with 9 dorsal spines, the last of which is merely an ossified ray. Dentition well developed, supra-orbital not serrate, a preorbital spine, lateral line complete, thorax naked, size small. Also in Stuttgart, I saw the holotype of *Equula novaehollandiae* Steindachner, 1879, which is an *Equulites*.

In the Zoological Museum of the University, Copenhagen, Denmark, I saw, amongst Forskal's types, his "*Scomber equula*", which is an *Equula* rather than a *Leiognathus*.

Family MULLIDAE.

PARUPENEUS SUFFLAVUS, sp. nov.

(Fig. 21.)

D. viii./i., 8; A. i., 6. L.lat., 28. Tr., 2/1 6½.

Head (59 mm.), 3.2; depth (62) 3 in standard length (190). Eye (12),

nearly 5; interorbital (17), 3.4; barbel (30), about 2; second dorsal spine (32) 1.8 in head.

Head longer than high, slightly excavate before eyes, scaly except tip of snout and on lower surfaces. Eye small, nearer edge of operculum than tip of snout. A single series of spaced peg-like teeth in jaws, none on vomer and palatines. Maxillary not reaching eye, its depth subequal to eye-diameter. Barbels not reaching preopercular margin. Gill-rakers about 18, plus rudiments, on lower half of first branchial arch.

Form rather robust and deep. Ventral scales weakly carinate. Lateral line tubes arborescent.

Second dorsal spine fairly rigid, not produced, not reaching soft dorsal when adpressed. Soft dorsal and anal fins naked, their lobes pointed. Last dorsal and anal rays not produced. Caudal shorter than head, its proximal half scaly.

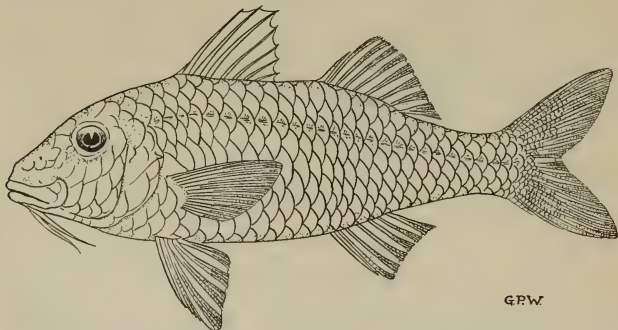


Fig. 21. Goatfish, *Parupeneus sufflavus*. Holotype, Queensland.

Colour in alcohol fairly uniform yellowish-brown, each scale with light or pearly centre causing rows of light and dark band-like markings. Back light behind soft dorsal fin. Fins with large light spots. No dark stripes or spots. Oblique bars may have crossed the head near eyes.

Near the *luteus* and *pleurospilus* of authors. Differs from *luteus* Cuv. & Val., in eye and preorbital characters, shorter barbels, etc., and from *pleurospilus* in lacking the characteristic colour-markings of that species and having much shorter barbels.

Described from the holotype of the species, a specimen 190 mm. in standard length or 9½ inches over all. Austr. Mus., Regd. No. IA.294.

Locality.—Holbourne Island, off Port Denison, Queensland; Mr. E. H. Rainford, 1921.

PENNON, gen. nov.

Orthotype, *Upenoides filifer* "Ogilby, 1910" = *Pennon filifer*.

Interorbital convex. Snout short. Maxilla barely reaching below eye, its depth less than eye-diameter. Eye in middle of head length. Teeth of

jaws in narrow villiform bands. Vomer and palatines toothless. Velum maxillae crenulated. Head scaly to snout, preorbital apparently scaly. About thirty transverse series of scales. Ventral scales carinate.

Second dorsal spine extremely long and flexible, reaching caudal peduncle. Soft dorsal and anal fins scaly anteriorly.

Coloration rosy and yellowish, without striking bars, spots or stripes.

Definition drawn up from one of Ogilby's co-types (Austr. Mus., Regd. No. I.12,541).

This genus differs from all other Mullidae in having long dorsal spine and in characters of dentition, etc.

PENNON FILIFER, *sp. nov.*

(Fig. 22.)

Upenoides filifer Ogilby, New Fish. Qld. Coast, December 20, 1910, p. 95. Off Cape Gloucester. Queensland. Paper printed but not published.

Upeneus filifer McCulloch and Whitley, Mem. Qld. Mus., viii., 1925, p. 156.

Although mentioned by various authors, this species has not hitherto been described in a scientific publication. Ogilby's account was as follows:—

D.viii./i., 8; A.i., 6; P., 13; Sc., 2/32/6. Depth of body, 3.8; length of caudal peduncle, 4.3; of head, 3.55; longest dorsal spine, 2.05; length of caudal fin, 3.85; of pectoral, 4.8; of ventral, 4.9 in length of body. Length of snout, 2.2; diameter of eye, 3.85; width of interorbit, 3.3; width of maxillary, 2.8 in length of head.

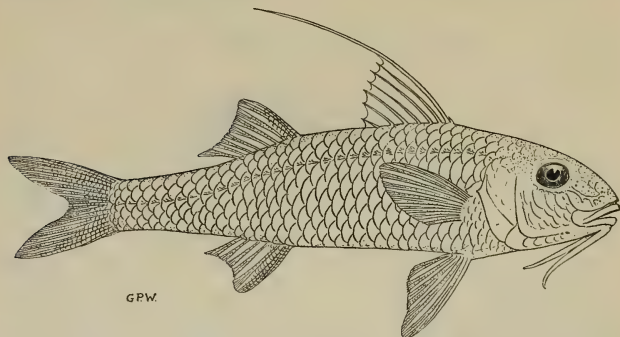


Fig. 22. Pennant Goatfish, *Pennon filifer*. Holotype, Queensland.

Body somewhat robust; caudal peduncle rather short and stout, its least depth 2.35 in its length and 1.3 in the length of the snout. Upper profile of head gently rounded; diameter of eye 1.75 in the length of the snout, and 1.15 in the convex interorbit; maxillary not quite extending to below the anterior border of the eye, the width of its distal extremity 2.4 in the eye-diameter; barbels short and rather stout, reaching to or slightly beyond the angle of the preopercle. Opercle with a small spine superiorly;

a short stout scapular spine. Extremity of snout and intermandibular region naked, rest of head scaly; cheek-scales in 4, interopercular in a single series; 5 complete scales between the dorsal fins; tubes of lateral line but sparsely branched, those of the peduncle bifid or simple.

Spinous dorsal originating above the base of the pectoral, its length without the terminal membrane equalling that of the soft dorsal; 1st spine very small; 2nd longest and greatly produced, extending when depressed beyond the base of the soft dorsal; soft dorsal as high as long, the anterior rays longest, 3.33 in the 2nd spine; last ray a little longer than the penultimate. Caudal deeply forked, the middle rays 2.3 in the upper lobe. Anal originating below the 2nd dorsal ray, its 1st ray longest, as long as or a little shorter than the 1st dorsal ray, and reaching when laid back to the tip of the last ray. Pectoral rounded, the 3rd ray longest, extending when appressed to below the 11th scale of the lateral line. Ventral a little longer than the pectoral, the spine nearly as long as the 2 outer and longest rays, which reach mid-way or rather less than mid-way between its origin and the base of the last anal ray.

Above roseate, shading through the pink of the sides to the pearly white of the throat and abdomen. Cheeks and opercles washed with gold; barbels lemon yellow. Iris purple with a narrow silver rim inferiorly. Dorsal and caudal fins pink, basally washed with gold; other fins colourless.

Total length, 170 millim.

Described on board the Endeavour from 2 specimens, 166 and 137 millim. long, obtained off Cape Gloucester; total number trawled 12.

Family CHEILODACTYLIDAE.

Genus NEMADACTYLUS Richardson, 1839.

Nemadactylus Richardson, Proc. Zool. Soc. Lond., vii., November, 1839, p. 97. Haplotype, *N. concinnus* Richardson.

Sciaenoides Richardson, Rept. 12th meet. Brit. Assoc. Adv. Sci., 1842 (1843), pp. 18-19. Logotype, *S. abdominalis* Richardson, selected by Whitley, Rec. Austr. Mus., xix., 1935, p. 235. Not *Sciaenoides* Blyth, 1860, a genus of Jewfishes.

Dactylopagrus Gill, Proc. Acad. Nat. Sci. Philad., xiv., May, 1862, p. 114. Orthotype, *Cheilodactylus carponemus* Cuv. & Val. Spelt *Dactylosparus* on p. 117.

Nematodactylus Gill, Proc. Acad. Nat. Sci. Philad., xiv., May, 1862, pp. 114 and 121. *Id.* Boulenger, Zool. Rec., 1880 (1881), Pisces, p. 8. Emend. for *Nemadactylus*.

The little fishes hitherto known as Paper Fish and Silvery Threadfin (*Nemadactylus*, *Evistius*, *Platystethus*) in south-eastern Australia and New Zealand, are actually young morwongs and trumpeters, an identity first hinted at, apparently, by Barnard regarding the South African *Palunolepis*. Examination of specimens and checking accounts in literature show that these post-larval forms may be linked up, with a fair degree of certainty, with the adult forms. In several cases the young ones have been given quite different generic names from the adults or even placed in far-away families. Consequently some synonymy is unavoidable.

The little fish described by Richardson in 1839 as *Nemadactylus concinnus* is evidently the young of the Jackass Fish, a morwong of the genus

generally known as *Dactylopagrus* or *Sciaenoides*, but these two names are of much later date, so should fall as synonyms of *Nemadactylus*. The Jackass Fish, therefore, should be called *Nemadactylus macropterus* from New Zealand, the name *concinus* replacing *aspersus* for the Tasmanian subspecies, if distinct.

Young morwongs of the *Nemadactylus* group have 17 or 18 dorsal spines, 28 dorsal rays, 3 anal spines and 15 to 17 anal rays; the lateral line bears about 50 to 55 scales; the lower pectoral rays are lengthened; length about 3 inches.

Family LATRIDIDAE.

Genus LATRIDOPSIS Gill, 1863.

LATRIDOPSIS FORSTERI (Castelnau, 1872).

(Fig. 23.)

Latris forsteri Castelnau, Proc. Zool. Soc. Vict., i., 1872, p. 77, and p. 79, as *L. bilineata* and *inornata*. Melbourne Market.

? *Platystethus huttonii* Günther, Ann. Mag. Nat. Hist. (4), xvii., May 1, 1876, p. 395. Dunedin, New Zealand.

Latris ramsayi Ogilby, Proc. Linn. Soc. N.S. Wales, x., July, 1885, p. 229. Sydney Markets, New South Wales.

Evistius huttonii tasmaniensis Whitley and Phillips, Trans. Roy. Soc. N. Zeal., lxix., 2, September, 1939, p. 234. On *E. huttonii* McCulloch, Rec. Austr. Mus., xiv., 2, 1923, p. 121, from Tamar River, Tasmania. Not *Platystethus huttonii* Günther, Ann. Mag. Nat. Hist. (4), xvii., 1876, p. 395, from New Zealand.

Here figured from the holotype of the subspecies *Evistius huttonii tasmaniensis* (Austr. Mus., Regd. No. I.6,222), which proves to be a juvenile

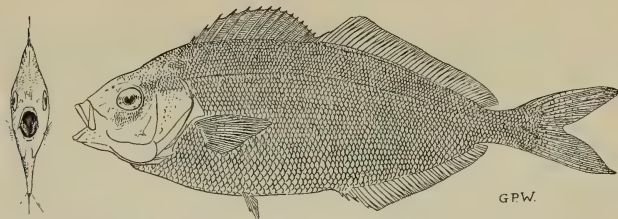


Fig. 23. Paper Fish, the Young Silver Trumpeter, *Latridopsis forsteri*.

Holotype of subspecies *Evistius huttonii tasmaniensis*, Tamar River, Tasmania. Also front view.

Latridopsis forsteri, hence the above synonymy. It has D.xvi./43; A.iii., 35. No vomerine teeth. Body compressed. Opercles mostly scaleless. L.lat. 103 circa. Tr. 10/1/c22.

Fairly uniform brownish, darker along back, after long preservation in alcohol. First dorsal fin dark. A dusky blotch behind eye. Eight inches over all.

Locality.—Tamar River Heads, Tasmania.

Barnard (Ann. S. Afr. Mus., xxi., 2, 1927, p. 454) stated that *Evistius huttonii* was a young Cheilodactylid, but, as it has more than 30 anal rays, it must enter the Latrididae.

It seems that the subspecies *tasmaniensis* at least is young *Latridopsis forsteri*. Thus *Evistius* becomes a synonym of *Latridopsis* and should be transferred from the Labracoglossidae (members of which have less than 30 anal rays) to the Latrididae. We may, however, use the term for the juvenile form and speak of the *Evistius* stage of a Latridid fish just as we speak of the *Leptocephalus* of an eel. R. M. Johnston has given a good account of the "Paper-fish" fry of *Latridopsis* in Tasmania.

Family CORIDAE.

Genus GUNTHERIA Bleeker, 1862.

GUNTHERIA DEVISI, *sp. nov.*

(Fig. 24.)

D. ix., 11; A. iii., 10; L. lat. 26. Tr. 1/1/7.

Head mostly naked; a few scales on cheeks and opercles. Curved canines in jaws not flaring outwards (2 in upper, 4 in lower) anteriorly. Lateral teeth uniserial, as a ridge. Posterior canine present. Lips normal. Preopercular margin entire.

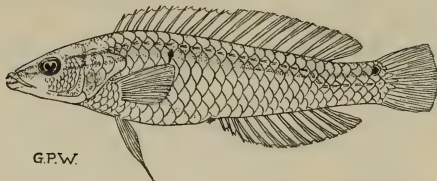


Fig. 24. Parrot Fish, *Guntheria devisi*. Holotype, Queensland.

Form rather elongate, compressed. Depth about 4 in standard length. Thoracic scales slightly smaller than those of body.

L. lat. continuous, bent behind. No scaly sheaths to dorsal and anal fins. Dorsal spines not elevated, their membranes slightly penicillated, the front spines not divergent. First ventral ray filamentous. Caudal convex.

Pale yellowish with a faint olive band along upper sides. Fins whitish. No blotches on dorsal. Dusky bar on snout and two indistinct oblique bars behind eye. An indistinct dusky blotch, subvertical on side above about end of pectoral. A conspicuous blackish spot on upper part of root of tail. Eye bluish. Eggs small, salmon-pink.

Described from the holotype, a spawning female, a little over three inches long (Regd. No. IB.1,033).

Locality.—Off Frazer Island, Queensland; 24° 52 min. S. lat. by 152° 48 min. E. long.; 15 fathoms. Agassiz Trawl, 15 minutes; 14/9/1938. M.V. "Warreen". Presented by Dr. H. Thompson. Holotype and paratypes, Regd. Nos. IB.1,033-1,034, in Australian Museum.

Named after C. W. de Vis, who described many Queensland parrot fishes many years ago.

Rather like *Halichoeres bimaculatus* Rüppell, but has different coloration and has caudal ocellus, also only 1 row of scales over lateral line, and is much smaller in size.

Genus DUYMAERIA Bleeker, 1856.

Duymaeria Bleeker, Act. Soc. Sci. Indo-Neerl., i., 1856, p. 52. Logotype, *Ctenolabrus aurigarius* Richardson, Zool. Sulphur. Fish., 1845, p. 90, pl. xlv., figs. 1-2, from Canton, China, selected by Jordan, Tanaka and Snyder, Journ. Coll. Sci. Imp. Univ. Tokyo, xxxiii., 1, 1913, p. 199, as *Crenilabrus*.

Labrastrum Guichenot, Rev. Mag. Zool. (2), xii., 1860, p. 152. Orthotype, *Ctenolabrus flagellifer* Cuvier and Valenciennes, 1839.

Small parrot-fishes with preoperculum serrate, anterior dorsal spines and membranes elevated into a crest, two rows of cheek-scales, and little more than 20 scales in the complete lateral line.

DUYMAERIA FLAGELLIFERA (Cuv. & Val., 1839).

Ctenolabrus flagellifer Cuvier and Valenciennes, Hist. Nat. Poiss., xiii., 1839, p. 240. Locality unknown.

Duymaeria flagellifer Fowler and Bean, Bull. U.S. Nat. Mus., 100, vii., 1928, p. 216 (refs. and synon.).

Thirteen specimens, 36 to 77 mm. in standard length, from off Frazer Island, Queensland; 24° 52 min. S. lat. x 150° 48 min. E. long. Caught in 15-minute Agassiz trawl from M.V. "Warreen" in 15 fathoms, 14th September, 1938. Australian Museum, Regd. Nos. I.B.1,035-1,036. Presented by Dr. H. Thompson, C.S.I.R. Marine Biological Laboratory, Cronulla, New South Wales.

New record (genus and species) for Australia. Extralimital in the East Indies, Philippines, Formosa, China and Japan.

Family BODIANIDAE.

VERREO UNIMACULATUS (Günther, 1862).

Mr. T. Payten recently secured a specimen of this Pigfish at Lord Howe Island, from which place it has not hitherto been recorded. It is fairly common in eastern Australia and has been recorded from Norfolk Island on the basis of a painting by George Raper made in the eighteenth century.

Family CALLYDONTIDAE.

PSEUDOSCARUS PULCHELLUS (Rüppell, 1835).

Scarus pulchellus Rüppell, Neue Wirbelth. Abyssin. Fische., 1835, p. 25, pl. viii., fig. 3. Djetta. *Id.* Delsman & Hardenberg, Indische Zeevisschen, 1934; coloured plate opp. p. 250.

Callyodon pulchellus Fowler & Bean, Bull. U.S. Nat. Mus., 100, vii., April 17, 1928, p. 423 (refs. & syn.). *Id.* Fowler, Mem. Bish. Mus., x., 1928, p. 379, *et ibid.*, xi., 1934, p. 440.

The Australian Museum recently received a fine specimen, 19½ inches over all, from the Gizo district, Solomon Islands (Regd. No. I.B.666)—a new record for the Solomon Islands. This species can now be added to the Australian list, as Mr. T. C. Marshall showed me one in the Queensland Museum from Cape Upstart, Queensland, painted by Mr. George Coates (Regd. No. Qld. Mus., I.6,157).

HETEROSCARUS ACROPTILUS (Richardson, 1846).

In September, 1937, I had the pleasure of seeing Ferdinand Lucas Bauer's drawings of New Holland animals in the British Museum (Natural History). The draughtsmanship and colouring were superb and the species

easily determinable. Drawing No. 35 represented the type of *Scarus acriptilus* Richardson, 1846, and showed the species usually known in Australia as *Heteroscarus filamentosus* Castelnau, 1872. However, Castelnau's trivial name can now be sunk as a synonym of *acriptilus*.

Family BLENNIIDAE.

PETROSCIRTES (OSTREOBLENNIUS) STEADI Whitley, 1930.

Mr. Tom Iredale has collected this species in the Noosa River, Queensland (Austr. Mus., Regd. Nos. IA.7,987-88).

Two specimens from three to four miles east of the Burnett River, Queensland; Agassiz trawl, 10 fathoms, 15 mins., 14/9/38, are in the C.S.I.R. collection, Cronulla, New South Wales.

New records for Queensland.

PETRAITES NASUTUS (Günther, 1861).

In December, 1937, I examined the type of *Cristiceps nasutus* Günther, 1861, in the British Museum. It is a small specimen of the species called *Petraites fasciatus* (Macleay, 1881), by McCulloch (Rec. Austr. Mus., vii., 1908, p. 42, pl. xi., fig. 2). This species must henceforth be called *Petraites nasutus* (Günther).

Mr. T. C. Marshall, of the Queensland Museum, caught two specimens of this species in rock pools at Caloundra in August, 1941.

New record for Queensland.

Family CLINIDAE.

CLINUS MARMORATUS Klunzinger, 1872.

(Fig. 25.)

Br., 6; D., 44; A., 30; P., 13; V., 3; C., 10. Height, 5 (before the vent); head, 6; breadth, 2; eye, 4; forehead, $1\frac{1}{2}$; snout, 1; preorbital, 3; anterior dorsal fin, 5; posterior, $2\frac{1}{2}$; tail, 8.

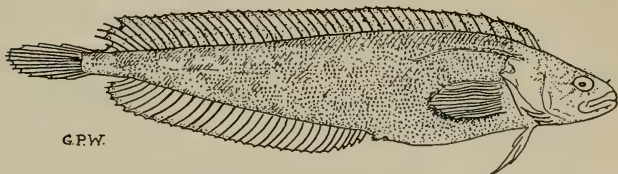


Fig. 25. Marbled Weedfish, *Clinus marmoratus*. Lectotype, Port Phillip, Victoria.

Body very elongated, compressed. Profile of head parabolic, anteriorly somewhat more curved on snout. Snout obtuse, short. Teeth in both jaws, in a band anteriorly, laterally in a row, very short and obtuse. Vomer, but not palatine, toothed. Maxillary reaches to below middle of eye. Eyes moderate, with a minute simple cirrus on the upper border. Interorbital space smaller than the eye. Head, velvety, occiput wholly scaleless. Remainder of body with small, rather indistinct, non-imbricate brown scales. Lateral line showing only anteriorly; it runs straight to the point of the pectorals, when it tends to drop downwards but soon vanishes. It is

formed of closely arranged longitudinal keels. Dorsal fin beginning just above the gill-covers, the anterior flexible spines are the shortest and not removed from the others; the first spines behind middle become markedly higher, particularly the penultimate five, which remain undivided, united posteriorly to the base of the tail by membrane. Anal similar with simple flexible spines; it begins below the fourteenth dorsal spine, the membrane behind the last ray not reaching the caudal fin. Pectorals ovate, not reaching vent. Ventrals with three undivided rays, of which the middle is the longest and reaches to middle of pectoral; the outer a little shorter, the inner very short; their insertion is jugular close behind the gill-membrane. Caudal elongate, rounded.

Colour, brown, marbled with darker spots, throat sometimes sprinkled with white. Fins punctated with blackish marbled with some light areas. Pectorals clear, darker spotted.

Length, six inches.

Locality.—Port Phillip, Victoria.

Klunzinger stated this species came near *Clinus cottoides* C. & V., and *despicillatus* Richardson, but was distinct. Two type-specimens of this species were seen by me in Stuttgart. I select the larger as lectotype; total length, 144 mm.

Coloration uniform brown after nearly seventy years in alcohol. Some dark brown margins to dorsal and anal fins. Light spaces at intervals along dorsal fin and on last ray. The proportions vary a little from those described by Klunzinger.

Family STICHARIIDAE (Ophiclinidae, olim).

STICHARIUM DORSALE Günther, 1867.

Ophiclinus gracilis Waite, 1906, agrees well with Günther's account of *Sticharium dorsale* and should evidently become a synonym of the latter. *Sticharium* is of earlier date than *Ophiclinus* for the genus and family name. For references, see Austr. Mus. Mem., v., 1929, pp. 352-358.

Family NOTOGRAPTIDAE.

Genus NOTOGRAPTUS Günther, 1867.

NOTOGRAPTUS GREGORYI, sp. nov.

(Plate i., fig. 26.)

Head (11 mm.), 7; depth of body (6), 13 in total length (78 mm.). Eye (2 mm.), subequal to caudal base (2) and greater than snout (1.5) or interorbital (1.5).

Form, eel-like, elongate. Head, long, naked, pointed, wider than high behind eyes. Snout bluntly rounded. Anterior nostrils flap-like. Interorbital slightly concave. Profile rising gibbously from nape to back. Eye small, anterior orbital margin free. Series of small round pores around eyes and opercles and chin. Preopercular margin subcutaneous. A broad flap at gill-opening. Opercle entire, not striated, unarmed, not excavated above. A blunt barbel on chin. Gape reaching well behind eye. Lower jaw included. Bands of fine teeth in jaws and on palatines; none on vomer. Tongue long with rounded tip. Gill-membranes separated by narrow isthmus.

Body compressed, covered with embedded scales, in about 25 rows down the deepest part. Lateral line ascending sharply from behind head and

running along back close to dorsal fin. It commences as modified scales but terminates in a series of simple pores. Back above lateral line naked, body also scaleless around shoulder and pectoral bases.

No separate spine in front of dorsal fin. Dorsal spines not pungent. Dorsal fin originating over posterior part of head as a low fin which increases in height considerably before joining the rounded caudal. The rays are overlain with adipose tissue anteriorly, but become clear posteriorly, numbering about 70. Anal fin originating behind vent, in anterior half of fish, and continued, like the dorsal, to the caudal; it has about 43 rays. Pectorals broadly rounded, 19-rayed, middle rays longest. The pectorals are not united by membranes to the opercular lobe. Rays branched and with few articulations. Ventral fins jugular, each reduced to two small rays, the outer longer and thicker than the inner. Vent behind a plicate pouch.

General colour, dark chocolate, uniform and without spots, almost blackish except for the margins of dorsal, anal and caudal fins which are dull white. Pectoral and ventral fins and opercular membrane yellowish white. Eye bluish. Cheeks, behind mouth, crossed by two or three dark ocelli of irregular pear-shape margined with yellowish. A small ocellus on each side of barbel and a pair of larger ocelli on each side of chin below eyes. A faint ocellus 4 rays from end of dorsal.

Described and figured from the holotype of the species, a unique specimen, three inches long.

Locality.—Head of Useless Inlet, Shark's Bay, Western Australia; dredged on the pearl shell beds, in 2 or 3 fathoms, July 2, 1939, collected by G. P. Whitley. Austr. Mus., Regd. No. IB.344.

Named in honour of Mr. John Gregory, who greatly assisted me in his capacity as Fisheries Officer at Shark's Bay.

Family CARAPIDAE.

Genus *CARAPUS* Rafinesque, 1810.

CARAPUS RENDAHLI, *sp. nov.*

(Fig. 27.)

Fierasfer *sp.* Rendahl, Vidensk. Medd. Dansk. Nat. Foren., lxxxii., October 30, 1925, p. 13. From surface at 36° S. lat., 150° 20 min. E. long. ("Endeavour"), New South Wales.

Carapus *sp.* Whitley, Fish. N.S. Wales (McCulloch), Ed. 3, 1934, suppl. Off Green Cape, New South Wales.

Head (11 mm.), 8.4; depth (5) 18.5 in total length (93). Eye, 3 mm.; snout, 2; interorbital, 1; pectoral, 2.5; width of head, 4; length of upper jaw, nearly 6; predorsal length, 12.

Head somewhat compressed; snout broad, obtuse, with bony crests. Operculum with one or two weak spines. Posterior nostrils large, well separated from anterior. Eyes large, interorbital narrow with median crest. Upper jaw longer, reaching behind eye. A large canine on each side of both jaws anteriorly, lower ones longest. Other teeth in jaws in bands of fine villiform or minutely conic teeth. Coarser and rather granular teeth on vomer and palate. The median vomerine teeth are largest but none is caninoid. Gill-openings very wide, united across isthmus. Seven branchiostegals. Gill-rakers slender, not numerous.

Body elongate, compressed, not gibbous, the dorsal profile little more

arched than ventral. Vent far forward, below pectoral fin; a festoon of the intestine being external. A small point behind head indicates site of larval dorsal spine, now lost. The true dorsal fin originates shortly behind this and continues to end of tail, which is truncately broken off in my

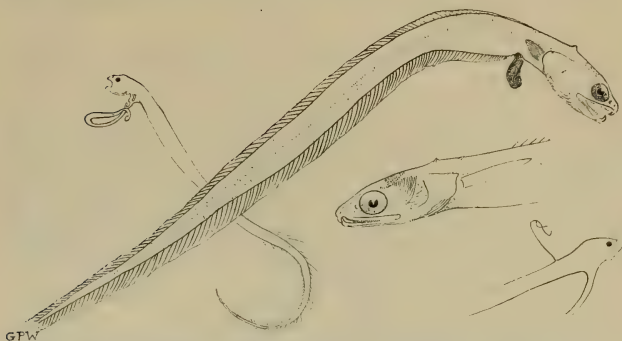


Fig. 27. Messmate Fish, *Carapus rendahli*. Holotype (central figure) and young stages from New South Wales. Semi-diagrammatic.

specimen. Anal fin many-rayed, like the dorsal, but higher, commencing behind vent. Pectorals small, pointed.

Colour, after long preservation in alcohol, yellowish-brown. Eye blue, canines white. Some spaced blackish chromatophores over brain and a few on snout and cheeks. Festoon of intestine blackish.

Described from the holotype of the species, an example 93 mm. or about 3½ inches long.

Locality.—Port Jackson, New South Wales; purchased in January, 1889. Austr. Mus., Regd. No. I.2,411. No mention of its habitat is made.

I provisionally identify as belonging to this new species larval specimens from the following localities:—

Two specimens, noted by Dr. Hjalmar Rendahl, from off the Tuross River, New South Wales; 36° S. x 150° 20 min. E., trawled by the "Endeavour", 28/9/1914. One was apparently lost with the "Endeavour", the other (of which Rendahl sent a sketch to McCulloch) is in the Riksmuseum, Stockholm.

One specimen from inside a large sponge, 22 miles N.E. from Green Cape, New South Wales; trawled in 39 to 46 fathoms. Austr. Mus., Regd. No. IA.1,958.

Many small examples in various stages of metamorphosis, netted by the C.S.I.R. vessel "Warreen" at the following stations:—

Station No.	Position.	Date.
59/38 ..	35° + S. x 150° 58 min. + E.	.. 11/10/38
60/38 ..	36° 19 min. 40 sec. S. x 150° 24 min. 48 sec. E.	.. 12/10/38
61/38 ..	36° 15 min. 40 sec. S. x 150° 15 min. 45 sec. E.	.. 12/10/38
131/39 ..	30° 17 min. S. x 153° 16 min. 30 sec. E.	.. 5/5/39

Station No.	Position.	Date.
266/39 36° 17 min. S. x 150° 25 min. E.		1/11/39
284/39 42° 35 min. S. x 148° 38 min. E.		12/11/39

All the above localities are in the Tasman Sea, off New South Wales, except the last, which is off eastern Tasmania.

Rendahl (Vidensk. Medd. Dansk. Foren., lxxxi., 1925, p. 13) recorded a *Fierasfer* sp. from Perseverance Harbour, Campbell Island, which may be allied or conspecific.

This new species differs from its Australian congeners as follows:— Differs from *Fierasfer houlti* Ogilby (Mem. Qld. Mus., vii., 1922, p. 301, pl. xix., fig. 1, from off Double Island Point, Queensland) in being much more slender and having different proportions in the parts of the head, also in having canine teeth. *Fierasfer margaritiferae* Rendahl (Kungl. Svenska. Vetenskaps. Handl., lxi., 9, 1921, p. 5, fig. 2, from Cape Jaubert, Western Australia) has similar dentition to mine but differs in proportions of head and body and has longer pectoral fins. *Oxybeles homei* Richardson (Zool. Voy. Erebus and Terror, Fish., 1846, p. 74, pl. xlv., figs. 7-19, from Timor) has enlarged teeth on vomer and jaws, quite unlike those of my specimen.

Family OPHIDIIDAE.

DANNEVIGIA, *gen. nov.*

Orthotype, *Dannevigia tusca*, sp. nov.

A genus of fairly large marine fishes with the ventral fins well forward on isthmus, body scaly, no barbels on head, and with dorsal, caudal and anal fins united. It is apparently closest to the European Cusk-Eel, *Ophidium*; but differs in having the scales in long longitudinal rows instead of in short criss-cross bars, in lacking enlarged teeth on the jaws, in proportions and other features. Other characters as described under species.

Named in honour of Harold Christian Dannevig, who was the founder of fisheries science in Australia. Born about 1860, near Arendal, Norway, Dannevig had a thorough practical fisheries training in Britain and Europe before coming to Australia in 1902, bringing live plaice from England, on the R.M.S. "Oroya". Though his acclimatization experiments came to nought, his work on Australian fresh and salt water fishes is of lasting value. In 1908 the Commonwealth appointed him Director of Fisheries for Australia. He planned the fisheries vessel "Endeavour" and directed its researches, and was lost at sea aboard that vessel when it disappeared without trace in December, 1914. None knew as well as he where our fishes could be caught and the best trawling-grounds. The fish described in this paper was discovered by him in March, 1913, when he wrote to the late A. R. McCulloch, ichthyologist at The Australian Museum, as follows:—"From its similarity with the European Tusk (*Brosimius*) I have entered it under that name in my notes. The specimens I sent are the smallest I could get. I have had them up to about 7 lb. in weight. I had one of these fish cooked and the flesh has a marked similarity to the European Cod, only it is a bit richer. I fancy I'll get them plentifully in 150-200 fathoms, where later on I'm going to try".

DANNEVIGIA TUSCA, sp. nov.

(Plate i., fig. 28.)

D., 103; A., 80; P., 24; V. 1. Sc. nearly 100. Tr. 11/1/32.

Head (96 mm.), 4.5; depth of body (85) 5.1 in total length (437). Eye

(17), 5.6; snout (27), 3.5; interorbital (25), 3.8 in head. Length of upper jaw (53), slightly shorter than pectoral fin (56). Longest ventral ray, 72 mm. Caudal, 23; depth of caudal peduncle, 5 mm.

Head deeper than wide and much longer than deep, rounded in front and oblong in transverse section behind. The snout ends in a skinny ridge, between the anterior nostrils, which has a slight median incision; below this ridge is a slight extension of the snout overhanging the premaxillaries. Nostrils two large oval openings on each side. Eye moderate, but covered with skin and its borders almost over-run by the longitudinal rows of scales which cover most of the head, except jaws and chin. No barbels or cirrhi. Mouth very large. Premaxillaries long, slender, protractile. Maxilla broad and large, scaly, reaching behind level of eye, its angle rounded and posterior margin truncate. Lips roughened at symphysis; lower lip finely plicate at sides. Lower jaw with elevated pad at ramus. Each jaw with a narrow band of fine, pluriserial, villiform teeth; upper jaw with, lower without symphyseal diastema. A triangular patch of similar villiform teeth on vomer, and a lanceolate patch, tapering posteriorly, on each palatine. Pterygoids edentulous. Other patches of teeth on hyoid and pharyngeal bones. Tongue broad, acute, with rounded tip. Two bony frontal crests may be felt beneath the spongy skin of the interorbital. Preopercular margin free, with two divergent subdermal spines. Preorbital and all opercles entire. A pungent spine formed by operculum and overlapping the suboperculum. Nine strong branchiostegal rays, mostly exposed. Gill-openings wide, united across, and to, isthmus. Three long, stout gill-rakers on upper part of lower half of first branchial arch, preceded by a series of spinulose short blunt rakers dwindling anteriorly.

Body tapering, compressed, covered with thin, imbricate, cycloid scales, which also extend on to the fins. Their margins are ovate or lanceolate, most of them have a median ridge and they are disposed in long, waved, longitudinal rows. Between the scale-rows are sulci which emphasize their direction. Lateral line complete, originating just behind a pocket over the gill-opening and following the curve of the back along the sides to the tail, its course is marked by shallow troughs and spaced ridges, too irregular to be precisely counted. The extensions of the lateral line over the head are very indistinct. Pectoral axil naked. Vent moderate, before anal fin. No genital cage.

Dorsal fin originating slightly behind level of gill-opening and extending along back to join the caudal; it has about one hundred rays, closest together posteriorly, but these are invested with fatty tissue and a scaly sheath. Anal fin originating in anterior half of fish, similar to dorsal, with about eighty rays and likewise joined to the small rounded caudal fin. Pectorals broadly rounded. Ventrals jugular, each of one long bifid ray.

Colour, after long preservation in formalin, uniform light brown. Eye yellowish, pupil bluish. No colour markings, but the scales are densely dotted with brown chromatophores.

Described and figured from the holotype of the species, a specimen 437 mm. or about 17½ inches over all.

Locality.—Great Australian Bight, Western Australia; edge of bank, S.W. from Eucla; 80 to 120 fathoms; April, 1913. F.I.V. "Endeavour" collection (Holotype, registered No. E.3,508).

Six paratypes (E.2,336 to 2,338, E.3,506 and 3,507, and I.12,320) from the same locality, or nearby, in 70 to 120 fathoms, March and April, 1913.

The paratypes enable me to determine certain internal characters which are important for comparison with allied genera. In one of these (E.3,506), the tail had been lost, possibly through being bitten off by another fish; the dorsal and anal fins have grown around part of the stump and a false caudal fin of regenerated rays has been formed rather like the re-grown tail of some of the Macrurid fishes.

Premaxillary processes longer than eye. Maxillary with a large supplemental bone. The large pungent spine which protrudes over the suboperculum originates on the reduced operculum. More than fifty myotomes, sixteen of which are before the tail. Otolith nearly as long as eye.

Four actinosts at pectoral base, with lenticular interspaces.

The ventral fins are not attached to any of the hyal bones but appear to have a small pelvic girdle. Peritoneum dark brownish-grey inside, milky-blue externally. Numerous pyloric caeca. The air-bladder is long and bag-shaped, tough, and widest posteriorly, where there is an aperture.

A few nematodes in coelome. Sex apparently male. Sixty vertebrae.

Food: Mantis shrimps and crabs.

Family PLATYCEPHALIDAE.

Subfamily CYMBACEPHALINAE.

Genus CYMBACEPHALUS Fowler, 1938.

Cymbacephalus Fowler, Proc. U.S. Nat. Mus., lxxxv., 1938, p. 90. Orthotype, *Platycephalus nematophthalmus* Günther.

CYMBACEPHALUS NEMATOPHTHALMUS (Günther, 1860).

Head moderately depressed, with ridges and spines and small scales. No radiating cranial ridges. Interorbital strongly excavate with several spines on its ridges posteriorly. A shallow pit behind each eye, the latter large, elliptical. Several conspicuous dermal flaps over eye and a tentacle on lower eyelid. Side of head uncarinate; infraorbital ridges spineless, the cheeks bulging below them. Nostril flaps small. Two very short, blunt, spaced preopercular spines, mostly covered by skin, and a vestige of a third lower spine; no antrorse spines. Teeth mostly villiform on jaws, vomer and palatines, but some are cardiform anteriorly; no enlarged canines.

Some dimensions, in mm., are: Head, 95; depth, 30; standard length, 215; horizontal diameter of eye, 17; vertical do., 14.5; interorbital, 7; depth of caudal peduncle, 10.

Body not elongate, depressed anteriorly and compressed behind caudal peduncle. Skin leathery; body with large cycloid scales. About fifty somewhat enlarged lateral line scales, none of them with upstanding spines; no bucklers. Fins as in flatheads generally. D.viii., 11; A., 11. Membranes extending to near tips of spines and rays.

Colour yellow above, whitish below. Some rusty oblique lines on fins, a few diffuse spots on head, and ill-defined orange bars on body anteriorly. Apparently no dark border to anal fin and only the very tips of the lower caudal rays fuscous.

Described from a specimen 215 mm. in standard length or ten inches over all. Austr. Mus., Regd. No. IB.470.

Locality.—Outer harbour, Albany, Western Australia; presented by Mr. A. J. Fraser, Chief Inspector of Fisheries, Perth, W. Australia.

New record for Western Australia.

Family ANTENNARIIDAE.

LOPHIOCHARON GORAMENSIS (Bleeker, 1864).

(Plate ii, fig. 29.)

Antennarius goramensis Bleeker, Nat. Tijdschr. Dierk., ii., 1864, p. 177, and Atlas Ichth., v., 1865, p. 17, pl. cxcv., fig. 2. Goram, Moluccas. *Id.* Günther, Journ. Mus. Godeff., xi., Fische der Sudsee, v., 1876, p. 164, pl. c., fig. B (as *A. commersonii*, var., from Ralatea).

D. iii., 13; A., 9; P., 11; V., 5; C., 9.

Head (67 mm.), 3.1; depth (167) 1.2 in standard length (210). Eye very small, an oblique ellipse, 7 mm. long, less than gill-opening (10). Upper jaw 62 mm. Low jaw jutting prominently. Preorbital overhanging premaxillary superiorly. Maxillary extensive, its end rounded. Several rows of backwardly-directed small canines on jaws, vomer, palatines and pterygoids and a patch on each side of tongue. Chin rounded, protruding. Pharynx plicate, greatly distensible. Nostrils elongate, slit-like.

Form very deep, somewhat compressed, subelliptical in transverse section, its width less than half its depth; upper profile gibbous, lower convex, the body being covered with baggy integument densely covered with a pile of short prickles. The latter are mostly bifid but some are trifid and a few are enlarged, notably in groups on hummocks at intervals along the lateral line system (notably along back, around operculum and chin, and behind maxillaries), where there may be a digitiform or filamentous cutaneous flap amongst the spines on the hummocks. No warts.

A naked patch of skin, but no sunken area, on each side of second (frontal) dorsal spine. Illicium long and filamentous, unfortunately incomplete in this specimen, at least 53 mm. long, and thus longer than frontal and occipital dorsal spines. Second dorsal spine much shorter and straighter than third, both connected by membrane to back.

Dorsal rays about equal to third dorsal spine, but the lengths are difficult to determine without dissecting away integument and basal tissue. Anal base less than half that of soft dorsal. Outlines of fins broadly rounded with ends of rays protruding bluntly. Most of the fin rays are simple, but some of the median rays of the unpaired fins are bifid. Ventral fins very short and broad.

Ground colour blackish, densely overlain by irregular patches of pink which are largest on sides of head, nape, flanks, and caudal base. Also irregularly disposed, but roughly conforming to the lateral line system, are series of greyish-brown lichen-like patches. Maxillary, inside of mouth, and chin brownish to brownish-grey with irregular cream lines. Vent and tips of fin-rays whitish. The whole coloration must resemble weed-covered rock to an extraordinary degree and effectively camouflage the living fish. The eye is almost invisible, being blended with the general colour-patterns. In spite of their irregular nature, the markings are fairly symmetrical on each side of the fish. No ocelli, though there are dusky patches on dorsal and anal bases. Illicium horn-yellowish with brown rings.

Described and figured from a specimen nearly one foot over all (Austr. Mus., Regd. No. IA.5,824).

Locality.—Off Cairns, north Queensland; 24 fathoms. Presented by Dr. P. S. Clarke in June, 1933. The circumstances of its capture were unusual,

the donor stating: "A Queensland Groper [*Promicrops lanceolatus*] weighing about two cwt. was caught on a fishing line when fishing at a depth of 24 fathoms. As soon as the Groper was landed on the deck it vomited the Angler Fish, which latter was alive at the time. Charles Jorgensen was the fisherman who caught the groper".

New record for Queensland. Extralimital in East Indies and Oceania.

Differs from *Antennarius* [= *Lophiocharon*] *goramensis*, as described and figured by Bleeker, in having the back more elevated, the occipital dorsal spine being higher than anterior dorsal rays, the distance from snout to origin of soft dorsal fin is subequal to that from origin of soft dorsal fin to roots of caudal rays, and in lacking the black ocelli, but these differences are probably due to ordinary variation.

From the genotype, *Lophiocharon broomensis* Whitley (Rec. Austr. Mus., xix., 1933, p. 104, pl. xv., fig. 1. Broome, Western Australia), *L. goramensis* differs in having teeth on vomer and on each side of tongue, dorsal spines more separated from one another and from soft dorsal fin, more pectoral rays, gill-openings greater than eyes, and in coloration.

ANTENNARIUS ASPER Macleay, 1881.

(Plate ii., fig. 30.)

Here figured from a specimen, nearly 4 inches long, from Murray Island, Queensland, which is very near the type locality, Darnley Island.

Austr. Mus., Regd. No. IA.3,718.

The rough skin, yellowish coloration, and black rings on the caudal membranes are characteristic.

HISTIOPHRYNE BOUGAINVILLI (Cuv. & Val., 1837).

(Fig. 31.)

This little Angler Fish was first discovered by Baron Bougainville's expedition, which may have dredged it at Sydney, though no type-locality was given. McCulloch and Waite (Rec. S. Austr. Mus., i., 1918, p. 72, pl. vii., fig. 1) figured it from South Australia, but it is also found well to the north and Waite (Rec. S. Austr. Mus., ii., 1924, p. 486) recorded it from Port Stephens, New South Wales, but the Australian Museum has since received specimens from Woy Woy, New South Wales, and Heron Island, Queensland—a new record for the latter State. The Woy Woy example is very bloated and its fins are abraded through its having been washed up on the ocean beach; standard length, 41 mm.

Its colours, when fresh, were bright yellow with faint greyish reticulations and a few large irregular rusty patches on sides and behind pectorals; eye green.

The small Queensland specimen may be described as follows:—

D. iii., 15; A., 8; P., 8; V., 5; C., 9.

Head (9 mm.), 2.6, depth (15) 1.6 in standard length (24). Width of head, 8 mm.; maxillary, 3.75; eye, 2 mm.; interorbital, 3; snout, 1.5; illicium, 2.5; depth of caudal peduncle, 3.5; preanal length, 16; base of soft dorsal (from first to last ray), 16; base of anal, 6.

Upper profile of head much steeper than lower, the head being higher than long. Maxilla narrow, just reaching below eye, and before a hump on the cheek. Head with series of paired flaps along mucous canal system.

Anterior nostrils bell-like, opening forwards; posterior nostrils smaller, opening upwards. Lower lip coarsely crenulated. Patches of villiform teeth on jaws and tongue. Chin prominent. Gill-opening in a small tube behind pectoral.

Skin smooth. Form elevated, compressed, back strongly arched, belly concave. The lateral line descends sharply behind the pectoral fin to the posterior anal rays. Illicium short with a club-like, truncated tip. Second



Fig. 31. Smooth Angler Fish, *Histiophryne bougainvilli*. Heron Island, Queensland.

dorsal spine also short, joined to third by membrane; the third spine is likewise connected to first dorsal ray. Length of dorsal rays increasing towards rear of fin. Anal rounded, its rays longer than the dorsal ones. Dorsal, anal and the rounded caudal joined by membranes. Most caudal rays branched. Pectorals of the usual elbowed type. Ventrals stubby, curled outwards.

General ground colour in formalin pale brownish-pink on head, body, and fins. Close-set pale brown mottlings on sides of head and body, or radiating from eye, the most conspicuous being three or four large clusters forming darker blotches along back below soft dorsal fin. Inner part of "wrist" with a dark greenish band. A small barnacle-like spot in pectoral axil. Tips of paired fins mottled brownish. Caudal with pink blotches. Eye pale green, pupil black.

Locality.—Heron Island, Queensland; in clump of coral (Regd. No. IB.771). Probably the coloration imitates, to some extent, the coral hiding-place.

Described from a specimen 24 mm. in standard length or $1\frac{1}{2}$ inches over all, obtained by Mr. A. A. Cameron, of Harwood Island, New South Wales, who has collected many interesting marine animals in Queensland and northern New South Wales.

Family TRIACANTHIDAE.

TRIACANTHUS FALCANALIS Ogilby, 1910.

(Fig. 32.)

Here figured from the smallest of Ogilby's co-types in the Queensland Museum, the lectotype, 191 mm. in standard length or about 9½ inches over all.

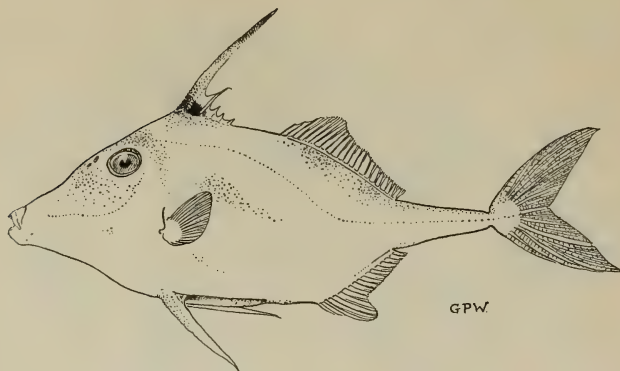


Fig. 32. Tripod Fish, *Triacanthus falcianalis*. Lectotype, Moreton Bay, Queensland.

This species may now be added to the New South Wales fauna, as Mr. G. Kesteven collected a young example in Terranora Lakes, Tweed River (Austr. Mus., Regd. No. IB.1,005).

Family BALISTIDAE.

Genus ABALISTES Jordan and Seale, 1906.

ABALISTES STELLATUS (Anon), var.

Balistes stellatus Anonymous, Allgem. Lit.-Zeitung, iii., 287, September 24, 1798, p. 682. Based on "Le Baliste étoilé" Lacépède, Hist. Nat. Poiss., i., 1798, p. 350, pl. xv., fig. 1, vernac. Indian Sea. *Id.* Daudin, Dict. Sci. Nat., iii., 1804, p. 474. *Id.* Günther, Cat. Fish. Brit. Mus., viii., 1870, p. 212 (Hope Is. and W. Austr., etc.). *Id.* Castelnau, Res. Fish. Austr. (Vict. Offic. Rec. Phil. Exhib.), 1875, p. 49 (Qld.). *Id.* Rendahl, K. Svenska Vet. Akad. Handl., lxi., 9, 1921, p. 23, fig. 7 (Cape Jaubert, W.A.).

Balistes stellaris Bloch and Schneider, Syst. Ichth., 1801, p. 476. On Lacépède, l.c.

Leiurus macrophthalmus Swainson, Nat. Hist. Fish. Amphib. Rept., ii., July, 1839, p. 326. On Russell, Fish. Vizag., 1803, pl. 22. Vizagapatam.

Leiurus russellii Swainson, *ibid.*, p. 326. On Russell, pl. 23, Vizagapatam (Swainson's copy in Austr. Mus. lib.).

Balistes phaleratus Richardson, Discov. in Austr. (Stokes), i., 1846, p. 484, pl. i., figs. 4-5 (young). West coast of Australia. Type in British Museum.

? *Balistes vachelli* Richardson, Zool. Sulphur., 1845, p. 129 (young). Canton.

Balistes phalliatius Bleeker, Atlas. Ichth., v., 1869, p. 106. Error for *phaleratus*, in synonymy of *Leiurus stellatus*.

Abalistes stellaris Jordan and Seale, Bull. U.S. Bur. Fish., xxv., 1905 (1906), p. 364, and of modern authors.

Abalistes stellaris var. *phaleratus* McCulloch, Rec. W. Austr. Mus., i., 3, 1914, p. 227 (Port Hedland, W.A.).

A fine specimen, 19 inches long, was caught off the Prince Henry Hospital, Little Bay, near Sydney, New South Wales, on 23rd April, 1940, and presented to the Australian Museum by Mr. W. Jones (Regd. No. IB.506).

New record for New South Wales.

The Australian Museum has specimens from McCulloch Reef, Great Barrier Reef, Queensland (W. E. Paradise); Port Hedland, north-west Australia (W.A. Mus.) form *phaleratus*; Hervey Bay district, Queensland (Dr. Lockwood); and Madras, India (F. Day).

Habitat.—W. Australia, Queensland, New South Wales, East Indies, India, Philippines, Pacific and Indian Oceans, South Africa, Red Sea.

The type may have come from Mauritius or India and the New South Wales specimen does not agree perfectly with the original description and figure, so may require a new subspecific name.

However, in view of known variation in file fishes, it may be left in abeyance for the time being.

Family ALEUTERIDAE.

BLANDOWSKIUS BUCEPHALUS Whitley, 1931.

Blandowskius bucephalus Whitley, Austr. Zool., vi., 4, February 13, 1931, p. 329, pl. xxvi., fig. 1. Off Wilson's Promontory, Victoria.

Messrs. Hugh Ward and Knud Moller have trawled several examples of this species in 35 to 70 fathoms off Eden—a new record for New South Wales.

These specimens, up to 4 inches over all, show that the head of the holotype was abnormal, for in these the profile is sloping and either gently convex or excavated before the eyes. The bluish spots are very regular. The dorsal spine is straight, or curved backwards, and is armed with four rows of spines.

Family MOLIDAE.

Genus MOLA Cuvier, 1798.

MOLA RAMSAYI (Giglioli, 1883).

Orthragoriscus ramsayi Giglioli, Nature, xxviii., August 2, 1883, p. 315. Sydney.

Mola ramsayi Whitley, Rec. Austr. Mus., xviii., 1931, p. 126, pl. xvi., figs. 1, 3 and 4, and text-fig. 2 (refs. and synonym.). *Id.* Griffin, Ann. Rept. Auckland Mus., 1931, pp. 13 and 37 (10 cwt., N.Z. specimen). *Id.* Schmidt, Dana's Togt. omkring jorden, 1932, p. 249, et seq., fig. 193. *Id.* Whitley, Vict. Naturalist, xlix., 1933, p. 210, figs. 1-2 (Lord Howe Is. juvenile). *Id.* Stead, Giants and Pigmies, 1933, p. 72 and figs.

Since 1931, when I issued a list of all the known Australasian occurrences of the Ocean Sunfish, several more specimens have come to light. Griffin (loc. cit.) refers to a 10 cwt. New Zealand specimen in 1931. On May 17, 1932, a sunfish, 7 ft. 4 in. long, was washed ashore at Bulli, New South Wales. A sunfish was caught at Point Piper, Port Jackson, on October 18, 1934. Then at the Eight-hour Day week-end, October 7, 1936, a large specimen was caught at Watson's Bay and kept in captivity for a few days at Manly Aquarium. A sunfish was caught with rod and reel near Bermagui, New South Wales, January 26, 1937. The *Auckland Weekly News* of April 7, 1937, figured another *Mola*, "stranded last week" at Onehunga Wharf, Auckland, New Zealand; it measured 3 by 4 feet and weighed about 150 lb. A large one, 11 ft. 4 in. between fin-tips, was found at Catherine Hill Bay, New South Wales, in February, 1938. A New Zealand example, $4\frac{1}{2}$ by 8 ft., was caught on a snapper line at Gisborne, New Zealand, in October, 1938.

The description of a "sunfish" from the Grafton district, New South Wales, published in the press early in 1939, obviously referred to a Devil Ray (*Daemomanta*). Finally, on February 26, 1939, a small sunfish was caught above the bridge at Roseville, near Sydney, New South Wales, in shallow water, miles from the open sea. Fortunately, Dr. H. C. Raven, of the American Museum of Natural History, was in Sydney, and we examined and dissected the specimen for comparison with Gregory and Raven's account of the anatomy of *Mola mola* in Copeia, 1934, 4, p. 145 and plate. The Roseville specimen agreed very closely with the American one in anatomical features. It was a young female, 5 ft. 7 in. in total length; the liver was very worm-infested and the alimentary canal, which measured 14 feet from the pharyngeal teeth to the anus, contained no food.

There were a few strips of *Zostera*-weed in the pharynx. The oviduct was preserved, also the pharyngeal teeth (Austr. Mus., Regd. No. IA.8,035). About 15 dorsal and anal rays and 12 pectoral could be counted exteriorly.

Dimensions: Total length, 67 inches; depth of body, 38; between dorsal and anal fin-tips, 87; head, $18\frac{1}{2}$; snout, $8\frac{1}{2}$; eye, $2\frac{1}{2}$; gill-opening, 4; pectoral base, $5\frac{1}{2}$; length of pectoral fin, $10\frac{1}{2}$.

Another sunfish was stranded at La Perouse, Botany Bay, on September 9, 1940, but had been towed to sea before I could examine it.

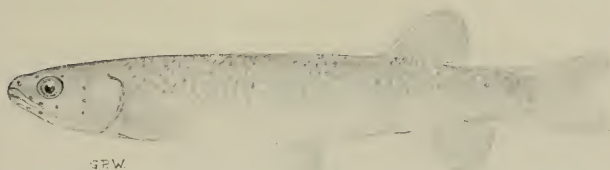


Fig. 4. Mountain Trout, *Galaxias bongbong*. Lectotype, Bong Bong, New South Wales.



Fig. 19. Rough Squirrel Fish, *Holotrachys oligolepis*. Holotype, Western Australia.



Fig. 26. Ethiopian, *Notograptus gregoryi*. Holotype, Shark's Bay, Western Australia.



Fig. 28. Australian Tusk, *Dannevigia tusca*. Holotype, Western Australia.

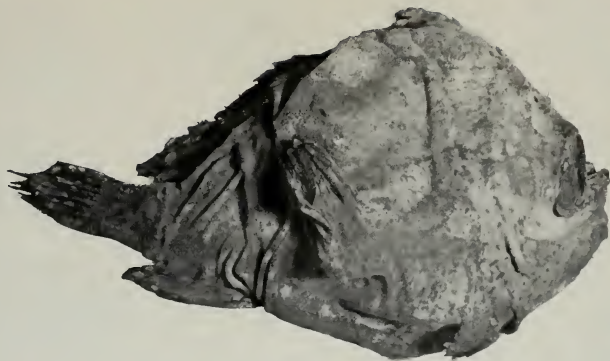


Fig. 29. Baggy Angler Fish, *Lophiocharon goramensis*. Off Cairns, Queensland.

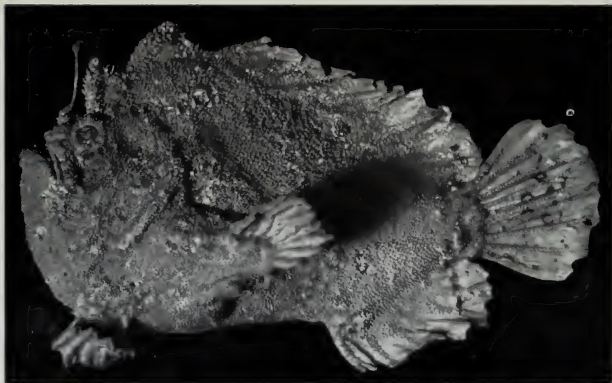


Fig. 30. Rough Angler Fish, *Antennarius asper*. Murray Island, Queensland.